

Section cross-reference(s): 7, 11

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 2 OF 21 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2

ACCESSION NUMBER: 2004:802532 HCAPLUS

DOCUMENT NUMBER: 141:276951

TITLE: Suppressing deterioration of agricultural products using cyclopropene derivatives

INVENTOR(S): Kashimura, Yoshiki; Hayama, Hiroko  
; Ito, Akiko

PATENT ASSIGNEE(S): Japan

SOURCE: U.S. Pat. Appl. Publ., 8 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004192554	A1	20040930	US 2004-810017	20040326
JP 2004300061	A2	20041028	JP 2003-94402	20030331
ZA 2004002168	A	20040929	ZA 2004-2168	20040101
AU 2004201001	A1	20041014	AU 2004-201001	20040310
KR 2004084695	A	20041006	KR 2004-19404	20040322
NZ 531971	A	20051125	NZ 2004-531971	20040326
BR 2004000797	A	20041207	BR 2004-797	20040329
EP 1464229	A1	20041006	EP 2004-251867	20040330
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				
CN 1535588	A	20041013	CN 2004-10031912	20040331
PRIORITY APPLN. INFO.:			JP 2003-94402	A 20030331
OTHER SOURCE(S):	MARPAT 141:276951			
GI				


 R I

AB A method of suppressing deterioration of the quality of an agricultural product comprises contacting the product under reduced pressure with a cyclopropene compound I (R = H or (un)substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, Ph or naphthyl). Deterioration of the quality of an agricultural product can be suppressed in a shorter period of time as compared with a time required by contacting the product with a cyclopropene derivative normal pressure.

IC ICM A01N027-00

INCL 504357000

CC 19-4 (Fertilizers, Soils, and Plant Nutrition)

Section cross-reference(s): 5

ST agricultural product preservation cyclopropene deriv

IT Flower

(cut; suppressing deterioration of agricultural products using cyclopropene derivs.)

IT Citrullus lanatus

Malus pumila  
 Prunus domestica  
 Prunus mume  
 Prunus persica  
 Pyrus communis  
 (fruit; suppressing deterioration of agricultural  
 products using cyclopropene derivs.)  
 IT Embryophyta  
 (ornamental plant; suppressing deterioration of  
 agricultural products using cyclopropene derivs.)  
 IT Diospyros  
 Fruit  
 Vegetable  
 (suppressing deterioration of agricultural products using  
 cyclopropene derivs.)  
 IT 2781-85-3D, Cyclopropene, derivs. 3100-04-7,  
 1-MethylCyclopropene  
 RL: BUU (Biological use, unclassified); FFD (Food or feed use);  
 BIOL (Biological study); USES (Uses)  
 (suppressing deterioration of agricultural products using  
 cyclopropene derivs.)  
 IT 2781-85-3D, Cyclopropene, derivs. 3100-04-7,  
 1-MethylCyclopropene  
 RL: BUU (Biological use, unclassified); FFD (Food or feed use);  
 BIOL (Biological study); USES (Uses)  
 (suppressing deterioration of agricultural products using  
 cyclopropene derivs.)  
 RN 2781-85-3 HCAPLUS  
 CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

△

RN 3100-04-7 HCAPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

△  
CH<sub>3</sub>

L92 ANSWER 3 OF 21 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3  
 ACCESSION NUMBER: 2004:523969 HCAPLUS  
 DOCUMENT NUMBER: 141:292343  
 TITLE: Reorientation of shoots to the horizontal position  
 influences the sugar metabolism of lateral buds and  
 shoot internodes in Japanese pear (*Pyrus pyrifolia*  
 (Burm.) Nak.)  
 AUTHOR(S): Ito, A.; Yoshioka, H.; Hayama, H.;  
 Kashimura, Y.  
 CORPORATE SOURCE: Laboratory of Plant Physiology, Department of Plant,  
 Cell and Environment, National Institute of Fruit Tree  
 Science, National Agricultural and Bio-oriented  
 Research Organization, Tsukuba, Ibaraki, 305-8605,  
 Japan  
 SOURCE: Journal of Horticultural Science & Biotechnology

sucrose concns. were higher in 'Kosui' than in 'Chojuro'. On the other hand, early three-week shadings (shading between May 24th to July 28th) decreased the concns. of sorbitol, glucose and fructose in the buds and simultaneously decreased the increment of bud fresh weight as compared with the non-treated buds, but later shadings (between July 28th to Sept. 2nd) did not. Activities of NAD-SDH, NADP-SDH, AI (soluble form) and SS became higher in the shaded bud than in the non-treated bud. When considering the data of untreated 'Kosui' and 'Chojuro' buds, bud growth rate correlated pos. with the activities of NAD-SDH and AI (soluble) whereas it correlated with no type of sugar concentration. On the other hand, when considering the data of untreated and shaded 'Kosui' buds, bud growth rate correlated with fructose, glucose and sorbitol concns. whereas it correlated with no type of enzyme activity. We postulate that the higher activities of sugar catabolizing enzymes should enhance the capacity of buds to attract assimilates thereby accelerating bud growth. However, when carbohydrate supply to the bud is severely limited, sugar concentration should be the limiting factor of bud growth.

CC 11-3 (Plant Biochemistry)

REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 5 OF 21 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 5

ACCESSION NUMBER: 2003:600016 HCAPLUS

DOCUMENT NUMBER: 139:146508

TITLE: Sugar metabolism in spur bud during flower bud formation: A comparison between exposed and shaded buds of Japanese pear [Pyrus pyrifolia (Burm.) Nak.] 'Kosui'

AUTHOR(S): Ito, Akiko; Hayama, Hiroko; Kashimura, Yoshiki

CORPORATE SOURCE: Dep. Plant, Cell Environ., Natl. Inst. Fruit Tree Sci., Natl. Agric. Res., Tsukuba, 305-8605, Japan

SOURCE: Journal of the Japanese Society for Horticultural Science (2003), 72(4), 253-261  
CODEN: EGKZA9; ISSN: 0013-7626

PUBLISHER: Engei Gakkai

DOCUMENT TYPE: Journal

LANGUAGE: English

AB To elucidate the role of carbohydrates and their metabolism during flower bud formation, the effects of shading the terminal buds of spurs of the Japanese pear 'Kosui' for 3 wk were investigated. The carbohydrates were: fructose, glucose, sorbitol, sucrose, and starch, whereas the related enzymes were: NAD-dependent sorbitol dehydrogenase (NAD-SDH), NADP-dependent sorbitol dehydrogenase (NADP-SDH), sucrose synthase (SS), and acid invertase (AI). Early treatments between 24 May to 28 July decreased both the concns. of sorbitol, glucose, and fructose in the buds and the bud fresh weight as compared with the non-treated, exposed buds. However, late treatments between 28 July to 2 Sept. did not. Activities of NAD-SDH, NADP-SDH, soluble AI, and SS increased in the shaded buds, although the differences between the treatments were temporary and sometimes insignificant. In contrast, cell wall-bound AI was temporarily decreased by the shading treatment. Contents of fructose, glucose, and sorbitol in buds were pos. correlated to the growth rate of the bud. On the other hand, sorbitol concentration was correlated neg. to the activities of total SDH (NAD-SDH + NADP-SDH) and soluble AI, and glucose with NADP-SDH. It is postulated that the sugar concentration may be the limiting factor for bud growth when the carbohydrate supply is insufficient. Shading increased the activities of sugar catabolizing enzymes in the bud that enhanced the capacity of buds to attract photosynthates (sink strength). It could be possible that the decrease of sugar concentration may act as a signal in the

(2004), 79(3), 416-422  
 CODEN: JHSBFA; ISSN: 1462-0316

PUBLISHER: Headley Brothers Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB We investigated the effects of reorienting shoots 60° from the vertical to horizontal on carbohydrate concns. and the related enzyme activities in the lateral bud and the shoot internode of Kosui Japanese pear, to clarify the change of sugar metabolism in response to shoot reorientation which is known to accelerate flower-bud formation. The carbohydrates included: fructose, glucose, sorbitol, sucrose and starch, where the related enzymes included: NAD-dependent sorbitol dehydrogenase (NAD-SDH), NADP-dependent SDH (NADP-SDH), sorbitol oxidase (SOX), sucrose synthase (SS) and acid invertase (AI). Concns. of sorbitol and sucrose in the lateral buds of a horizontal shoot temporarily decreased on day 3 after shoot reorientation (DAR) but did not differ significantly from those of the controls on 7 DAR and thereafter. On the other hand, sorbitol and sucrose concns. of the central internode of horizontal shoots were higher on 30 DAR than those of untreated shoots. Glucose and fructose levels were not influenced by shoot reorientation. Activities of NAD-SDH, NADP-SDH and soluble AI, that degrade translocated sugars, in lateral buds increased on 20 and 30 DAR, whereas NAD-SDH in the internode of the shoot center decreased on 30 DAR. No other enzymes measured were influenced by the reorientation. Consequently, these changes may increase the sink capacity of the bud relative to shoot tissue, thereby stimulating bud growth.

CC 11-3 (Plant Biochemistry)

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 4 OF 21 HCPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 4

ACCESSION NUMBER: 2004:647380 HCPLUS  
 DOCUMENT NUMBER: 142:257813  
 TITLE: Possible roles of sugar concentration and its metabolism in the regulation of flower bud formation in Japanese pear (*Pyrus pyrifolia*)  
 AUTHOR(S): Ito, A.; Hayama, H.; Kashimura, Y.  
 CORPORATE SOURCE: Department of Plant, Cell and Environment, National Institute of Fruit Tree Science, National Agriculture and Bio-oriented Research Organization, Tsukuba, Ibaraki, 305-8605, Japan  
 SOURCE: Acta Horticulturae (2004), 636 (Key Processes in the Growth and Cropping of Deciduous Fruit and Nut Trees), 365-373  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB In order to elucidate the role of carbohydrate in flower bud formation, the relationship between bud growth rate and sugar concns./sugar catabolizing enzyme activities were investigated during flower bud development using untreated and shaded buds of 'Kosui', and untreated buds of 'Chojuro' Japanese pears (*Pyrus pyrifolia*). Concns. of fructose, glucose, sorbitol and sucrose were measured, as were the activities of NAD-dependent sorbitol dehydrogenase (NAD-SDH), NADP-dependent SDH (NADP-SDH), sucrose synthase (SS) and acid invertase (AI) in the buds. When comparing untreated 'Kosui' and 'Chojuro' buds, bud weight increment was larger in 'Chojuro' than in 'Kosui', and activities of all enzymes measured here were higher in 'Chojuro' than in 'Kosui'. Sorbitol and

regulation of sugar catabolizing enzymes.

CC 11-2 (Plant Biochemistry)

L92 ANSWER 6 OF 21 HCPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 6

ACCESSION NUMBER: 2002:872141 HCPLUS

DOCUMENT NUMBER: 138:166698

TITLE: Sugar metabolism in buds during flower bud formation: a comparison of two Japanese pear [Pyrus pyrifolia (Burm.) Nak.] cultivars possessing different flowering habits

AUTHOR(S): Ito, Akiko; Hayama, Hiroko;  
Kashimura, Yoshiki

CORPORATE SOURCE: Cell and Environment, Department of Plant, National Agricultural Research Organization, National Institute of Fruit Tree Science, Ibaraki, Tsukuba, 305-8605, Japan

SOURCE: Scientia Horticulturae (Amsterdam, Netherlands) (2002), 96(1-4), 163-175

CODEN: SHRTAH; ISSN: 0304-4238

PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB In order to elucidate the role of carbohydrate in flower bud formation, the seasonal changes of carbohydrate concns. (fructose, glucose, sorbitol, sucrose and starch) and the activities of enzymes catabolizing sorbitol (NAD-dependent sorbitol dehydrogenase (NAD-SDH), NADP-dependent sorbitol dehydrogenase (NADP-SDH) and sorbitol oxidase (SOX)) and sucrose (sucrose synthase (SS) and acid invertase (AI)) were investigated during flower bud formation using the terminal bud of the spur of Kosui' and Chojuro' Japanese pears (Pyrus pyrifolia (Burm.) Nak.). Bud size measured after leaves had fallen was larger in Chojuro' than in Kosui'. The buds containing one primordium were significantly smaller than those containing two or three primordia for both cultivars. Concns. of the carbohydrates in the bud were not significantly different between the cultivars. On the other hand, sucrose metabolizing enzymes showed higher activities in Chojuro' than in Kosui' throughout the measurement period. Similarly, the activities of sorbitol metabolizing enzymes were higher in Chojuro' than in Kosui' though the differences were temporal. Addnl., bud growth rate correlated pos. with the activities of NAD-SDH and AI (soluble) during the period of flower bud development. Thus, sugar metabolic activity was involved in bud growth, whereas the role of sugar concentration in buds remained

undetd. Apparently, greater activities of sugar catabolizing enzymes may enhance the capacity of buds to attract assimilates, thereby accelerating bud growth and increasing the number of primordia in the bud.

CC 11-3 (Plant Biochemistry)

REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 7 OF 21 HCPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 7

ACCESSION NUMBER: 2001:827299 HCPLUS

DOCUMENT NUMBER: 136:180709

TITLE: Changes in the levels of mRNAs for putative cell wall-related genes during peach fruit development

AUTHOR(S): Hayama, Hiroko; Shimada, Takehiko; Ito, Akiko; Yoshioka, Hiroto; Kashimura, Yoshiki

CORPORATE SOURCE: National Institute of Fruit Tree Science, Tsukuba, Ibaraki, 305-8605, Japan

SOURCE: Scientia Horticulturae (Amsterdam, Netherlands)

(2001), 91(3,4), 239-250  
 CODEN: SHRTAH; ISSN: 0304-4238

PUBLISHER: Elsevier Science B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Cell wall changes are important factors for understanding fruit development. Four cDNA clones putatively encoding xyloglucan endotransglycosylase (pfPpXet1), expansin (pfPpExp2), sucrose synthase (pfPpSS1), and cellulose synthase (pfPpCesA1), which are all assumed to relate to cell wall modification, were isolated from developing fruit of peach (*Prunus persica* cv. Akatsuki), and the relationships between their mRNA accumulations and fruit development were investigated. Each of these four clones showed a different and characteristic pattern of mRNA expression. For example, the accumulation pattern of pfPpExp2 mRNA was in accordance with peach fruit development; i.e., it is abundant in the fruit when the fruit is growing and hardly detectable in the fruit when the fruit growth slows. The pfPpXet1 mRNA was detected in fruit in the earlier stages of development only. The result suggests that cell wall-related genes are differentially regulated during fruit development in peach.

CC 11-3 (Plant Biochemistry)

REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 8 OF 21 HCPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 8

ACCESSION NUMBER: 2001:96238 HCPLUS  
 DOCUMENT NUMBER: 134:203737  
 TITLE: Effect of maleic hydrazide on endogenous cytokinin contents in lateral buds, and its possible role in flower bud formation on the Japanese pear shoot

AUTHOR(S): Ito, Akiko; Hayama, Hiroko;  
 Kashimura, Yoshiki; Yoshioka, Hirohito

CORPORATE SOURCE: Department of Pomology, National Institute of Fruit Tree Science, Ministry of Agriculture, Forestry and Fisheries, Tsukuba, 305-8605, Japan

SOURCE: Scientia Horticulturae (Amsterdam) (2001), 87(3), 199-205

CODEN: SHRTAH; ISSN: 0304-4238  
 PUBLISHER: Elsevier Science B.V.

DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB In order to elucidate the role of maleic hydrazide (MH) in increasing flower bud formation on the Japanese pear, the effect of MH on cytokinin contents in the lateral buds of Japanese pear shoots were investigated. Foliar application of MH at 2600 mg l-1 increased zeatin, zeatin riboside, and isopentenyladenine levels in lateral buds though isopentenyladenosine concentration decreased. Application of 2,3,5-triiodobenzoic acid (TIBA), an inhibitor of polar auxin transport, also increased the endogenous cytokinin levels in lateral buds. These increases of cytokinin in lateral buds may be involved in the increase of flower bud production on the Japanese pear shoot. The increases of cytokinin induced by these chems. may be caused via the depletion of the auxin level and/or the activity in shoot tissues.

CC 5-3 (Agrochemical Bioregulators)

REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 9 OF 21 HCPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 9

ACCESSION NUMBER: 2001:920571 HCPLUS  
 DOCUMENT NUMBER: 136:180717

TITLE: The effect of shoot-bending on the amount of diffusible indole-3-acetic acid and its transport in shoots of Japanese pear  
 AUTHOR(S): Ito, A.; Hayama, H.; Yoshioka, H.  
 CORPORATE SOURCE: Department of Pomology, National Institute of Fruit Tree Science, Ministry of Agriculture, Forestry and Fisheries, Tsukuba, 305-8605, Japan  
 SOURCE: Plant Growth Regulation (2001), 34(2), 151-158  
 CODEN: PGRED3; ISSN: 0167-6903  
 PUBLISHER: Kluwer Academic Publishers  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB The amount of diffusible indole-3-acetic acid (IAA) in shoots of Japanese pear (*Pyrus pyrifolia*) decreased when vertical shoots were bent at an angle of 45°. A significant decrease of diffusible IAA was observed one day after shoot bending (DAB), and the degree of this decrease was larger in the apical region of the shoot than in the basal region. The decrease caused by the shoot bending increased with the duration of the treatment. The IAA ams. in the bent shoot in the apical, central, and basal segments on 1 DAB were 58.2±6.4%, 92.6±7.6%, and 79.1±7.1% of the control, while 43.7±4.1%, 30.8±2.9%, and 39.4±2.5% on 14 DAB. Radiolabeled IAA transport velocity was also examined, but it was not influenced by the shoot angle in the apical region of the shoot. However, the IAA transport velocity in the basal region decreased. It dropped first on 1 DAB, but it recovered to the control level 3 DAB, then it decreased again on 14 DAB. A large increase in ethylene production was observed in the bent shoot, but it seemed transient and did not continue for 14 days. These results suggest that the decrease of diffusible IAA ams. may be induced not by the decrease of IAA transport velocity but by the production/supply of IAA in the apical region.  
 CC 11-3 (Plant Biochemistry)  
 REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 10 OF 21 HCPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 10  
 ACCESSION NUMBER: 2001:47973 HCPLUS  
 DOCUMENT NUMBER: 135:118382  
 TITLE: Molecular cloning of a ripening-related expansin cDNA in peach: evidence for no relationship between expansin accumulation and change in fruit firmness during storage  
 AUTHOR(S): Hayama, Hiroko; Shimada, Takehiko; Haji, T.; Ito, Akiko; Kashimura, Yoshiki; Yoshioka, Hiroto  
 CORPORATE SOURCE: Department of Pomology, National Institute of Fruit Tree Science, Tsukuba, 305-8605, Japan  
 SOURCE: Journal of Plant Physiology (2000), 157(5), 567-573  
 CODEN: JPPHEY; ISSN: 0176-1617  
 PUBLISHER: Urban & Fischer Verlag  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB A cDNA (PchExp1) encoding a ripening-regulated expansin was isolated from ripe peach fruit. PchExp1 encodes a predicted protein of 252 amino acids including the predicted signal sequence. The phylogenetic tree based on the deduced amino acid sequences indicated that PchExp1 was most closely related to apricot PaExp2 and strawberry ripening-regulated FaExp2, and distantly to tomato ripening-regulated LeExp1. The accumulation of PchExp1 mRNA was fruit-specific and ripening-regulated. Furthermore, it was enhanced abundantly in 6 h by ethylene treatment. However, the

patterns of PchExpl mRNA abundance in the ripe fruit of Akatsuki, which lost its firmness rapidly after harvest, and Yumyeong, which retained its firmness after harvest, were very similar during storage for eight days, irresp. of their different traits regarding changes in fruit firmness. The accumulation of protein recognized by the antibodies for LeExpl is also detected in the ripe fruit of Yumyeong. The present study suggests that PchExpl may play an important role in peach fruit ripening, but the accumulation of PchExpl may not regulate the changes in fruit firmness during storage of the peach.

CC 6-3 (General Biochemistry)

Section cross-reference(s): 3, 11

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 11 OF 21 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 11

ACCESSION NUMBER: 2000:703093 HCAPLUS

DOCUMENT NUMBER: 133:248310

TITLE: Effects of plant growth regulators and their time of application on flower bud formation of Japanese pear 'Kosui'

AUTHOR(S): Ito, Akiko; Hayama, Hiroko;  
Yoshioka, Hirohito

CORPORATE SOURCE: Natl. Inst. Fruit Tree Sci., Min. Agric. For. Fish.,  
2-1 Fujimoto, Tsukuba, Ibaraki, 305-8605, Japan

SOURCE: Journal of the Japanese Society for Horticultural  
Science (2000), 69(5), 529-535  
CODEN: EGKZA9; ISSN: 0013-7626

PUBLISHER: Engei Gakkai

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Effects of several plant growth regulators on flower bud initiation on current shoots in Japanese pear (*Pyrus pyrifolia* Nakai) cv. Kosui were investigated. The applications of maleic hydrazide (C-MH, 1,2-dihydro-3,6-pyridazinedione choline); uniconazole-P (UCZ, (E)- (S)-1-(4-chlorophenyl)-4,4-dimethyl-2-(1H-1,2,4-triazol-1-yl)pent-1-en-3-ol); benzylaminopurine (BA, N-(phenylmethyl)-1h-purin-6-amine); and abscisic acid (ABA) from early June to early August promoted flower bud formation or were ineffective depending on the time of application. C-MH increased flower bud number when applied in July, whereas UCZ was effective only when applied before or in early July. BA and ABA applications increased flower bud number when applied between early June and late July. The effect of gibberellin (GA4) application differed depending on the application date. Compared to the control, fewer flower buds were initiated by early June application; whereas more were formed by an early August spray. The possible mechanism(s) on how the regulators affect flower bud initiation on shoots of Japanese pear 'Kosui' are discussed.

CC 5-3 (Agrochemical Bioregulators)

L92 ANSWER 12 OF 21 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 12

ACCESSION NUMBER: 2000:35924 HCAPLUS

DOCUMENT NUMBER: 132:191817

TITLE: Bending shoots stimulates flowering and influences hormone levels in lateral buds of Japanese pear

AUTHOR(S): Ito, Akiko; Yaegaki, Hideaki; Hayama, Hiroko; Kusaba, Shinnosuke; Yamaguchi, Isomaro; Yoshioka, Hirohito

CORPORATE SOURCE: National Institute of Fruit Tree Science, Ministry of Agriculture, Forestry, and Fisheries, Ibaraki, 305-8605, Japan

SOURCE: HortScience (1999), 34(7), 1224-1228

CODEN: HJHSAR; ISSN: 0018-5345

PUBLISHER: American Society for Horticultural Science

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Flower development of the lateral buds was accelerated in Japanese pear [*Pyrus pyrifolia* (Burm.) Nak.] when vertical shoots were bent at a 45° angle in late June. The indole-3-acetic acid (IAA) concentration in lateral buds on vertical (control) shoots increased in mid-July, while remaining nearly constant in bent shoots. The abscisic acid (ABA)

concentration of

buds in bent shoots rose between 4 July and 15 Aug., whereas control shoots exhibited an increase in concentration followed by a decline.

Gibberellin

A4+7 (GA4+7) concentration was high on 16 June, and then declined by 4 July, with

the decline being greatest in bent shoots. Gibberellin A4+7 concentration was higher in the buds on vertical shoots than in those on bent shoots for much of July. The concns. of zeatin-type cytokinins (CKs) in lateral buds were higher in bent shoots than in vertical shoots. Bending of pear shoots may weaken competition between buds and other organs through altering hormone levels in lateral buds, resulting in acceleration of flower development.

CC 11-3 (Plant Biochemistry)

REFERENCE COUNT: 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 13 OF 21 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:517699 HCPLUS

TITLE: Ethylene and fruit softening in the stony hard mutation in peach

AUTHOR(S): Hayama, Hiroko; Tatsuki, Miho; Ito, Akiko; Kashimura, Yoshiki

CORPORATE SOURCE: Department of Plant, Cell & Environment, NARO, National Institute of Fruit Tree Science, 2-1 Fujimoto, Tsukuba, Ibaraki, 305-8605, Japan

SOURCE: Postharvest Biology and Technology (2006), 41(1), 16-21

PUBLISHER: Elsevier Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The stony hard (hd) peach is characterized by a lack of ethylene production and a firm flesh in mature fruit; exogenous ethylene induces a loss of fruit firmness. The mutation is inherited independently of the M (melting/non-melting) trait that is controlled by a ripening-related endopolygalacturonase (endoPG) gene. We studied the process of fruit softening and the activities of the three pectolytic enzymes: endoPG, exopolygalacturonase (exoPG), and pectin methylesterase (PME), in the stony hard cv. Manami with and without ethylene treatment. Exogenous ethylene rapidly reduced the flesh firmness of the stony hard fruit which neatly correlated with increases of endo- and exoPG activity. The increased levels of endo- and exoPG activity resembled those detected in fruit of the normal cv. Akatsuki, which served as a control. In contrast to PGs, PME activity was not affected by ethylene and did not correlate with flesh firmness. Thus, the stony hard mutation does not seem related to fruit softening enzymes, but to the control of ethylene levels in the ripening fruit. Our results underline the crucial role of ethylene in the induction of fruit softening in peach.

CC 11 (Plant Biochemistry)

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS

## RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 14 OF 21 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:863883 HCAPLUS  
 DOCUMENT NUMBER: 142:71547  
 TITLE: Effect of shoot bending on endogenous auxin and cytokinin levels in buds, and its possible relationship to flower bud formation in Japanese pear  
 AUTHOR(S): Ito, A.; Yoshioka, H.; Hayama, H.; Kashimura, Y.  
 CORPORATE SOURCE: National Institute of Fruit Tree Science, National Agricultural Research Organization, Tsukuba, 305-8605, Japan  
 SOURCE: Acta Horticulturae (2004), 653 (Proceedings of the Ninth International Symposium on Plant Bioregulators in Fruit Production, 2001), 57-62  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Shoot bending (30-45°) is known to accelerate flower development in Japanese pear, and here it is shown that this acceleration of flower development is accompanied by notable changes in endogenous hormone levels in the lateral buds. Indole-3-acetic acid (IAA) concentration in the lateral buds on vertical shoots increased in mid-July, but that in the bent shoot remained nearly constant. On the other hand, the concns. of zeatin-type cytokinins in buds were higher in bent shoots than vertical shoots. Addnl., when maleic hydrazide, an anti-auxin, was applied to the pear shoots at 2,600 mg L-1, zeatin, zeatin riboside, and isopentenyladenine levels in lateral buds were increased whereas isopentenyladenosine concentration was decreased. Thus, the depletion of the level and/or the activity of auxin in shoot tissues is responsible for the increase of bioactive cytokinin concentration in lateral buds. Thus, these changes of endogenous hormones may be involved in the acceleration of the lateral bud development.  
 CC 11-3 (Plant Biochemistry)  
 Section cross-reference(s): 5  
 REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 15 OF 21 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2003:428186 HCAPLUS  
 DOCUMENT NUMBER: 139:359508  
 TITLE: Identification of a new expansin gene closely associated with peach fruit softening  
 AUTHOR(S): Hayama, Hiroko; Ito, Akiko; Moriguchi, Takaya; Kashimura, Yoshiki  
 CORPORATE SOURCE: Cell & Environment, Department of Plant, National Institute of Fruit Tree Science, NARO, Tsukuba, Ibaraki, 305-8605, Japan  
 SOURCE: Postharvest Biology and Technology (2003), 29(1), 1-10  
 CODEN: PBTEED; ISSN: 0925-5214  
 PUBLISHER: Elsevier Science B.V.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Expansins are proteins that have been shown to contribute to fruit softening in tomato. However, expansins that have been correlated with loss of fruit firmness have not yet been identified in peach (*Prunus persica* (L.) Batsch). Along with the previously isolated PpExpl, two new

TITLE: NECROTIZING ANGITIS OF THE STOMACH AND SMALL INTESTINE.  
 AUTHOR(S): ITO A; YOSHIKI K; SHIBUE K  
 SOURCE: Hokkaido Journal of Medical Science, (1971) Vol. 46, No. 2,  
 pp. 113-115.  
 CODEN: HOIZAK. ISSN: 0367-6102.  
 DOCUMENT TYPE: Article  
 FILE SEGMENT: BR  
 LANGUAGE: Unavailable  
 CONCEPT CODE: Pathology - Inflammation and inflammatory disease 12508  
 Pathology - Necrosis 12510  
 Digestive system - Pathology 14006  
 Cardiovascular system - Heart pathology 14506  
 Cardiovascular system - Blood vessel pathology 14508  
 Respiratory system - Pathology 16006  
 Coelomic membranes, mesenteries and related structures  
 18200  
 Immunology - Immunopathology, tissue immunology 34508  
 Allergy 35500  
 INDEX TERMS: Major Concepts  
 Allergy (Clinical Immunology, Human Medicine, Medical  
 Sciences); Cardiovascular Medicine (Human Medicine,  
 Medical Sciences); Clinical Endocrinology (Human  
 Medicine, Medical Sciences); Gastroenterology (Human  
 Medicine, Medical Sciences); Pulmonary Medicine (Human  
 Medicine, Medical Sciences)  
 INDEX TERMS: Miscellaneous Descriptors  
 HUMAN LUNG HEART MESENTERY HYPER SENSITIVE ANGITIS  
 ORGANISM: Classifier  
 Hominidae 86215  
 Super Taxa  
 Primates; Mammalia; Vertebrata; Chordata; Animalia  
 Taxa Notes  
 Animals, Chordates, Humans, Mammals, Primates,  
 Vertebrates

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 STN  
 ACCESSION NUMBER: 1972:21003 BIOSIS  
 DOCUMENT NUMBER: PREV197208021003; BR08:21003  
 TITLE: CANCEROUS NEUROPATHY IN CONJUNCTION WITH AN  
 UNDIFFERENTIATED CARCINOMA OF THE LUNG.  
 AUTHOR(S): YOSHIKI K; ITO A; GOTO S; TAKEDA T;  
 OITA T  
 SOURCE: Hokkaido Journal of Medical Science, (1971) Vol. 46, No. 1,  
 pp. 32.  
 CODEN: HOIZAK. ISSN: 0367-6102.  
 DOCUMENT TYPE: Article  
 FILE SEGMENT: BR  
 LANGUAGE: Unavailable  
 CONCEPT CODE: Cytology - Human 02508  
 Chordate body regions - Head 11304  
 Pathology - Inflammation and inflammatory disease 12508  
 Pathology - Necrosis 12510  
 Digestive system - Pathology 14006  
 Urinary system - Pathology 15506  
 Respiratory system - Pathology 16006  
 Nervous system - Pathology 20506  
 Neoplasms - Pathology, clinical aspects and systemic  
 effects 24004  
 Development and Embryology - Morphogenesis 25508

Cytology - Human 02508  
 Anatomy and Histology - Microscopic and ultramicroscopic anatomy 11108  
 Nervous system - Pathology 20506  
 Neoplasms - Pathology, clinical aspects and systemic effects 24004

## INDEX TERMS:

Major Concepts  
 Cell Biology; Morphology; Neurology (Human Medicine, Medical Sciences); Oncology (Human Medicine, Medical Sciences)

## INDEX TERMS:

Miscellaneous Descriptors  
 HUMAN DESMOSOMES CLEAR CELLS DARK CELLS

## ORGANISM:

Classifier  
 Hominidae 86215  
 Super Taxa  
 Primates; Mammalia; Vertebrata; Chordata; Animalia  
 Taxa Notes  
 Animals, Chordates, Humans, Mammals, Primates, Vertebrates

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ACCESSION NUMBER: 1972:18849 BIOSIS

DOCUMENT NUMBER: PREV197208018849; BR08:18849

TITLE: AN ELECTRON MICROSCOPIC STUDY OF PAGETS DISEASE OF THE EXTERNAL GENITAL ORGAN.

AUTHOR(S): ITO A; YOSHIKI K; SHIRATORI A

SOURCE: Hokkaido Journal of Medical Science, (1971) Vol. 46, No. 2, pp. 141-142.

CODEN: HOIZAK. ISSN: 0367-6102.

DOCUMENT TYPE: Article

FILE SEGMENT: BR

LANGUAGE: Unavailable

CONCEPT CODE: Microscopy - Electron microscopy 01058

Cytology - Human 02508

Biochemistry studies - Minerals 10069

Anatomy and Histology - Microscopic and ultramicroscopic anatomy 11108

Metabolism - Minerals 13010

Metabolism - Metabolic disorders 13020

Reproductive system - Pathology 16506

Neoplasms - Pathology, clinical aspects and systemic effects 24004

Major Concepts

Morphology; Oncology (Human Medicine, Medical Sciences);

Reproductive System (Reproduction)

## INDEX TERMS:

Miscellaneous Descriptors

HUMAN SQUAMOUS CELLS DARK CELLS

## ORGANISM:

Classifier

Hominidae 86215

Super Taxa

Primates; Mammalia; Vertebrata; Chordata; Animalia

Taxa Notes

Animals, Chordates, Humans, Mammals, Primates, Vertebrates

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ACCESSION NUMBER: 1972:18821 BIOSIS

DOCUMENT NUMBER: PREV197208018821; BR08:18821

Qazi 10/810017:

09/06/2006

INDEX TERMS: Major Concepts  
 Neurology (Human Medicine, Medical Sciences); Oncology  
 (Human Medicine, Medical Sciences); Pulmonary Medicine  
 (Human Medicine, Medical Sciences)

INDEX TERMS: Miscellaneous Descriptors  
 HUMAN OAT CELL CARCINOMA CEREBRAL CORTEX CAUDATE NERVE

ORGANISM: Classifier  
 Hominidae 86215  
 Super Taxa  
 Primates; Mammalia; Vertebrata; Chordata; Animalia  
 Taxa Notes  
 Animals, Chordates, Humans, Mammals, Primates,  
 Vertebrates

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ACCESSION NUMBER: 1972:21001 BIOSIS

DOCUMENT NUMBER: PREV197208021001; BR08:21001

TITLE: A CYTOMEGALIC INCLUSION DISEASE IN CONJUNCTION WITH NEPHROSIS.

AUTHOR(S): ITO A; YOSHIKI K; NAGAMATSU K; HIROTO A

SOURCE: Hokkaido Journal of Medical Science, (1971) Vol. 46, No. 1,  
 pp. 29-30.  
 CODEN: HOIZAK. ISSN: 0367-6102.

DOCUMENT TYPE: Article

FILE SEGMENT: BR

LANGUAGE: Unavailable

CONCEPT CODE: Biochemistry studies - Lipids 10066  
 Anatomy and Histology - Microscopic and ultramicroscopic  
 anatomy 11108  
 Metabolism - Lipids 13006  
 Digestive system - Pathology 14006  
 Urinary system - Pathology 15506  
 Respiratory system - Pathology 16006  
 Endocrine - Adrenals 17004  
 Bones, joints, fasciae, connective and adipose tissue -  
 Pathology 18006  
 Virology - Animal host viruses 33506  
 Medical and clinical microbiology - Virology 36006

INDEX TERMS: Major Concepts  
 Digestive System (Ingestion and Assimilation); Endocrine  
 System (Chemical Coordination and Homeostasis);  
 Infection; Microbiology; Respiratory System  
 (Respiration); Urinary System (Chemical Coordination and  
 Homeostasis)

INDEX TERMS: Miscellaneous Descriptors  
 PNEUMONIA CYTOMEGALOVIRUS PULMONARY FIBROSIS FATTY LIVER  
 ADRENAL CONTRACTION HISTOLOGY

ORGANISM: Classifier  
 Viruses 03000  
 Super Taxa  
 Microorganisms  
 Taxa Notes  
 Microorganisms, Viruses

ORGANISM: Classifier  
 Chordata 85000  
 Super Taxa  
 Animalia  
 Taxa Notes  
 Animals, Chordates

L15 STR  
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 L18 1989 SEA FILE=HCAPLUS ABB=ON PLU=ON L17  
 L19 209 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 (L) FFD/RL  
 L20 6257 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PRESERVATION/CT  
 L21 3796 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PRESERVATIVES/CT  
 L22 3084 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PACKAGING/CT  
 L23 173776 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESERV?/BI  
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 L25 1267067 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESSURE?/BI  
 L26 QUE ABB=ON PLU=ON (VACUUM# OR VACUO OR EVACUAT?)/BI  
 L27 33904 SEA FILE=HCAPLUS ABB=ON PLU=ON (LOW/OBI OR REDUC?/OBI OR  
 PUMP?/OBI) (5A) L25  
 L30 QUE ABB=ON PLU=ON FRUIT?/BI  
 L31 QUE ABB=ON PLU=ON VEGETABL?/BI  
 L32 QUE ABB=ON PLU=ON ORNAMENT?/BI  
 L33 QUE ABB=ON PLU=ON FLOWER?/BI  
 L34 QUE ABB=ON PLU=ON (APPLE# OR PEAR# OR PERSIMMON# OR PE  
 ACH## OR PLUM# OR MELON# OR JAPAN? APRICOT?)/BI  
 L40 5 SEA FILE=HCAPLUS ABB=ON PLU=ON (L18 OR L19) AND (L20 OR L21  
 OR L22 OR L23 OR L24) AND (L25 OR L26 OR L27) AND (L30 OR L31  
 OR L32 OR L33 OR L34)

=> d que nos L48

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 L30 QUE ABB=ON PLU=ON FRUIT?/BI  
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 L32 QUE ABB=ON PLU=ON ORNAMENT?/BI  
 L33 QUE ABB=ON PLU=ON FLOWER?/BI  
 L34 QUE ABB=ON PLU=ON (APPLE# OR PEAR# OR PERSIMMON# OR PE  
 ACH## OR PLUM# OR MELON# OR JAPAN? APRICOT?)/BI  
 L43 QUE ABB=ON PLU=ON 19/SC,CC,SX  
 L44 QUE ABB=ON PLU=ON 17/SC,CC,SX  
 L47 256 SEA FILE=HCAPLUS ABB=ON PLU=ON (L18 OR L19) AND (L43 OR L44)  
 AND (L20 OR L21 OR L22 OR L23 OR L24) AND (L30 OR L31 OR L32  
 OR L33 OR L34)  
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=> d que nos L53

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 L25 1267067 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESSURE?/BI  
 L29 631057 SEA FILE=HCAPLUS ABB=ON PLU=ON ATMOSPHER?/BI

*STRUCTURE/TEXT  
SEARCH*

=>

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=> file hcaplus
FILE 'HCAPLUS' ENTERED AT 13:12:22 ON 06 SEP 2006
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FILE COVERS 1907 - 6 Sep 2006 VOL 145 ISS 11  
FILE LAST UPDATED: 5 Sep 2006 (20060905/ED)

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'OBI' IS DEFAULT SEARCH FIELD FOR 'HCAPLUS' FILE

=> d que nos L39

L15	STR
L17	326 SEA FILE=REGISTRY SSS FUL L15
L18	1989 SEA FILE=HCAPLUS ABB=ON PLU=ON L17
L19	209 SEA FILE=HCAPLUS ABB=ON PLU=ON L17 (L) FFD/RL
L20	6257 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PRESERVATION/CT
L21	3796 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PRESERVATIVES/CT
L22	3084 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PACKAGING/CT
L23	173776 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESERV?/BI
L24	577173 SEA FILE=HCAPLUS ABB=ON PLU=ON (RIPE# OR RIPEN? OR DISCOLOR? OR BROWN? OR DECAY? OR DETERIORAT?) /BI
L25	1267067 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESSURE?/BI
L26	QUE ABB=ON PLU=ON (VACUUM# OR VACUO OR EVACUAT?) /BI
L27	33904 SEA FILE=HCAPLUS ABB=ON PLU=ON (LOW/OBI OR REDUC?/OBI OR PUMP?/OBI) (5A) L25
L28	QUE ABB=ON PLU=ON (KPA OR ATM)/BI
L29	631057 SEA FILE=HCAPLUS ABB=ON PLU=ON ATMOSPHER?/BI
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L31	QUE ABB=ON PLU=ON VEGETABL?/BI
L32	QUE ABB=ON PLU=ON ORNAMENT?/BI
L33	QUE ABB=ON PLU=ON FLOWER?/BI
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L39	54 SEA FILE=HCAPLUS ABB=ON PLU=ON (L18 OR L19) AND (L20 OR L21 OR L22 OR L23 OR L24) AND (L25 OR L26 OR L27 OR L28 OR L29) AND (L30 OR L31 OR L32 OR L33 OR L34)

=> d que nos L40

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 L33 QUE ABB=ON PLU=ON FLOWER?/BI  
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 ACH## OR PLUM# OR MELON# OR JAPAN? APRICOT?)/BI  
 L50 QUE ABB=ON PLU=ON (LOW OR REDUC? OR MODIF?)/BI  
 L51 197971 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 (5A) (L29 OR L25)  
 L81 110 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND (USPATFULL/LC OR  
 USPAT2/LC)  
 L82 48 SEA L81  
 L83 34 SEA (L30 OR L31 OR L32 OR L33 OR L34) AND L82  
 L84 18 SEA L25 AND L83  
 L85 11 SEA (L26 OR L27 OR L51) AND L84

=> s L84-L85 not L91

L95 17 (L84 OR L85) NOT L91

=> => dup rem L93 L94 L95

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 PROCESSING COMPLETED FOR L93

PROCESSING COMPLETED FOR L94

PROCESSING COMPLETED FOR L95

L96 87 DUP REM L93 L94 L95 (17 DUPLICATES REMOVED)  
 ANSWERS '1-56' FROM FILE HCAPLUS  
 ANSWERS '57-65' FROM FILE MEDLINE  
 ANSWERS '66-73' FROM FILE BIOSIS  
 ANSWERS '74-87' FROM FILE USPATFULL

=> d ibib abs hitind hitstr L96 1-56; d iall L96 57-73; d ibib abs kwic hitstr L96  
 74-87

L96 ANSWER 1 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1  
 ACCESSION NUMBER: 2006:166246 HCAPLUS  
 TITLE: Enhancing the post-harvest qualities of mango  
 fruit by vacuum infiltration  
 treatment with 1-methylcyclopropene

L22 3084 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PACKAGING/CT  
 L23 173776 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESERV?/BI  
 L24 577173 SEA FILE=HCAPLUS ABB=ON PLU=ON (RIPE# OR RIPEN? OR DISCOLOR?  
 OR BROWN? OR DECAY? OR DETERIORAT?)/BI  
 L25 1267067 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESSURE?/BI  
 L30 QUE ABB=ON PLU=ON FRUIT?/BI  
 L31 QUE ABB=ON PLU=ON VEGETABL?/BI  
 L32 QUE ABB=ON PLU=ON ORNAMENT?/BI  
 L33 QUE ABB=ON PLU=ON FLOWER?/BI  
 L34 QUE ABB=ON PLU=ON (APPLE# OR PEAR# OR PERSIMMON# OR PE  
 ACH## OR PLUM# OR MELON# OR JAPAN? APRICOT?)/BI  
 L64 2 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND MEDLINE/LC  
 L65 1 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND EMBASE/LC  
 L66 6 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND BIOSIS/LC  
 L67 8 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND AGRICOLA/LC  
 L68 9 SEA FILE=REGISTRY ABB=ON PLU=ON (L64 OR L65 OR L66 OR L67)  
 SEL PLU=ON L68 1- CHEM : 32 TERMS  
 L70 9369 SEA L69  
 L71 462 SEA (L20 OR L21 OR L22 OR L23 OR L24) AND L70  
 L75 577 SEA (L30 OR L31 OR L32 OR L33 OR L34) AND L70  
 L77 22 SEA (L71 OR L75) AND L25

=> s (L72 or L74 or L76 or L77) not L90

L94 31 (L72 OR L74 OR L76 OR L77) NOT L90

=> file uspatall

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FILE 'USPAT2' ENTERED AT 13:12:33 ON 06 SEP 2006  
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=> d que nos L84

L15 STR  
 L17 326 SEA FILE=REGISTRY SSS FUL L15  
 L25 1267067 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESSURE?/BI  
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 L31 QUE ABB=ON PLU=ON VEGETABL?/BI  
 L32 QUE ABB=ON PLU=ON ORNAMENT?/BI  
 L33 QUE ABB=ON PLU=ON FLOWER?/BI  
 L34 QUE ABB=ON PLU=ON (APPLE# OR PEAR# OR PERSIMMON# OR PE  
 ACH## OR PLUM# OR MELON# OR JAPAN? APRICOT?)/BI  
 L81 110 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND (USPATFULL/LC OR  
 USPAT2/LC)  
 L82 48 SEA L81  
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 L84 18 SEA L25 AND L83

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 L27 33904 SEA FILE=HCAPLUS ABB=ON PLU=ON (LOW/OBI OR REDUC?/OBI OR

L69 SEL PLU=ON L68 1- CHEM : 32 TERMS  
 L70 9369 SEA L69  
 L71 462 SEA (L20 OR L21 OR L22 OR L23 OR L24) AND L70  
 L72 6 SEA L51 AND L71

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 OR BROWN? OR DECAY? OR DETERIORAT?)/BI  
 L26 QUE ABB=ON PLU=ON (VACUUM# OR VACUO OR EVACUAT?)/BI  
 L64 2 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND MEDLINE/LC  
 L65 1 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND EMBASE/LC  
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 L67 8 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND AGRICOLA/LC  
 L68 9 SEA FILE=REGISTRY ABB=ON PLU=ON (L64 OR L65 OR L66 OR L67)  
 L69 SEL PLU=ON L68 1- CHEM : 32 TERMS  
 L70 9369 SEA L69  
 L71 462 SEA (L20 OR L21 OR L22 OR L23 OR L24) AND L70  
 L74 2 SEA L26 AND L71

=> d que nos L76

L15 STR  
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 L33 QUE ABB=ON PLU=ON FLOWER?/BI  
 L34 QUE ABB=ON PLU=ON (APPLE# OR PEAR# OR PERSIMMON# OR PE  
 ACH## OR PLUM# OR MELON# OR JAPAN? APRICOT?)/BI  
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 L65 1 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND EMBASE/LC  
 L66 6 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND BIOSIS/LC  
 L67 8 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND AGRICOLA/LC  
 L68 9 SEA FILE=REGISTRY ABB=ON PLU=ON (L64 OR L65 OR L66 OR L67)  
 L69 SEL PLU=ON L68 1- CHEM : 32 TERMS  
 L70 9369 SEA L69  
 L76 11 SEA (L30 OR L31 OR L32 OR L33 OR L34) AND L70 AND (L51 OR L26)

=> d que nos L77

L15 STR  
 L17 326 SEA FILE=REGISTRY SSS FUL L15  
 L20 6257 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PRESERVATION/CT  
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L43           QUE ABB=ON PLU=ON 19/SC,CC,SX  
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 L43           QUE ABB=ON PLU=ON 19/SC,CC,SX  
 L44           QUE ABB=ON PLU=ON 17/SC,CC,SX  
 L50           QUE ABB=ON PLU=ON (LOW OR REDUC? OR MODIF?)/BI  
 L51   197971 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 (5A) (L29 OR L25)  
 L52    45 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND (L18 OR L19)  
 L53    23 SEA FILE=HCAPLUS ABB=ON PLU=ON L52 AND (L43 OR L44)  
 L55    2 SEA FILE=HCAPLUS ABB=ON PLU=ON L53 AND L25

=> s (L39 or L40 or L48 or L53 or L55) not L89

L93           56 (L39 OR L40 OR L48 OR L53 OR L55) NOT L89

=> file medline embase biosis agricola

FILE 'MEDLINE' ENTERED AT 13:12:27 ON 06 SEP 2006

FILE 'EMBASE' ENTERED AT 13:12:27 ON 06 SEP 2006  
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FILE 'BIOSIS' ENTERED AT 13:12:27 ON 06 SEP 2006  
 Copyright (c) 2006 The Thomson Corporation

FILE 'AGRICOLA' ENTERED AT 13:12:27 ON 06 SEP 2006

=> d que nos L72

L15           STR  
 L17    326 SEA FILE=REGISTRY SSS FUL L15  
 L20   6257 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PRESERVATION/CT  
 L21   3796 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PRESERVATIVES/CT  
 L22   3084 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PACKAGING/CT  
 L23   173776 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESERV?/BI  
 L24   577173 SEA FILE=HCAPLUS ABB=ON PLU=ON (RIPE# OR RIPEN? OR DISCOLOR?  
 OR BROWN? OR DECAY? OR DETERIORAT?)/BI  
 L25   1267067 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESSURE?/BI  
 L29   631057 SEA FILE=HCAPLUS ABB=ON PLU=ON ATMOSPHER?/BI  
 L50           QUE ABB=ON PLU=ON (LOW OR REDUC? OR MODIF?)/BI  
 L51   197971 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 (5A) (L29 OR L25)  
 L64    2 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND MEDLINE/LC  
 L65    1 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND EMBASE/LC  
 L66    6 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND BIOSIS/LC  
 L67    8 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND AGRICOLA/LC  
 L68    9 SEA FILE=REGISTRY ABB=ON PLU=ON (L64 OR L65 OR L66 OR L67)

1-2 steps and then dried at 20-250°C at **atmospheric pressure** or under **vacuum**. The MCP preps. can be made by direct contact of gaseous MCP with the pretreated sorbents shaken together for 15-90 min. The innovation increases MCP contents in the preps. and can decrease the costs of using other rather expensive sorbent substances, such as  $\alpha$ -cyclodextrin. The MCP preps. were used for **preservation of apples, pears, sour cherries, tomatoes, cucumbers, cut flowers, etc.**

CC 17-4 (Food and Feed Chemistry)

Section cross-reference(s) : 5

ST methylcyclopropene prepн pretreated sorbent fruit  
vegetable preservation

IT Amphoteric materials

Food preservation

Fruit

Ion exchangers

Sorbents

Surfactants

Vegetable

(method for obtaining powder preps. containing 1-methylcyclopropene adsorbed on pretreated sorbents for post-harvest treatment of agricultural crops)

IT Alcohols, biological studies

Alkali metal hydroxides

Amides, biological studies

Amines, biological studies

Aminoplasts

Brown coal

Carboxylic acids, biological studies

Crown ethers

Cryptands

Diatomite

Esters, biological studies

Polyoxyalkylenes, biological studies

Polysaccharides, biological studies

Salts, biological studies

Silica gel, biological studies

Sunflower oil

Zeolite-group minerals

RL: AGR (Agricultural use); FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(method for obtaining powder preps. containing 1-methylcyclopropene adsorbed on pretreated sorbents for post-harvest treatment of agricultural crops)

IT 56-81-5, Glycerol, biological studies 60-00-4, Edta, biological studies

60-35-5, Acetamide, biological studies 64-19-7, Acetic acid, biological studies

100-97-0, Urotropin, biological studies 127-09-3, Sodium acetate

144-55-8, Sodium bicarbonate, biological studies 298-14-6,

Potassium bicarbonate 497-19-8, Sodium carbonate, biological studies

506-87-6, Ammonium carbonate 584-08-7, Potassium carbonate 1066-33-7,

Ammonium bicarbonate 1309-48-4, Magnesium oxide (MgO), biological

studies 1310-73-2, Sodium hydroxide, biological studies 1344-28-1,

Alumina, biological studies 3100-04-7, 1-Methylcyclopropene

7585-39-9,  $\beta$ -Cyclodextrin 7761-88-8, Silver nitrate, biological

studies 9002-89-5, Polyvinyl alcohol 9003-07-0, Polypropylene

9003-53-6, Polystyrene 9005-25-8, Starch, biological studies

9011-05-6, Urea-formaldehyde resin 10016-20-3,  $\alpha$ -Cyclodextrin

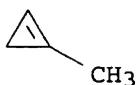
14187-32-7, Dibenzo-18-crown-6 17465-86-0,  $\gamma$ -Cyclodextrin

23978-09-8, Kryptofix 222 25322-68-3, Polyethylene glycol 31364-42-8,

Kryptofix 221 33100-27-5, 15-Crown-5 37205-87-1, Neonol AF9-12

IT 3100-04-7, 1-Methylcyclopropene  
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (extension of shelf life of banana fruit by  
 methylcyclopropene in combination with polyethylene bags)

RN 3100-04-7 HCAPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 23 THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 4 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2006:25280 HCAPLUS  
 DOCUMENT NUMBER: 144:107269  
 TITLE: Method for obtaining preparations for post-harvest treatment of agricultural crops  
 INVENTOR(S): Shvets, V. F.; Gudkovskii, V. A.; Kozlovskii, R. A.; Kustov, A. V.; Suchkov, Y. P.  
 PATENT ASSIGNEE(S): Obshchestvo s Ogranichennoi Otvetstvennost'yu "Vega-Kim", Russia  
 SOURCE: Russ., 6 pp.  
 CODEN: RUXXE7  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Russian  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

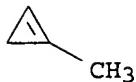
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RU 2267272	C1	20060110	RU 2004-119878	20040701
PRIORITY APPLN. INFO.:			RU 2004-119878	20040701

AB Preps. for post-harvest treatment of fruits and vegetables and other agricultural crops are described. The preps. are based on 1-methylcyclopropene (MCP) as an inhibitor of plant and fruit maturation and aging. The preps. can be obtained by adsorption of gaseous MCP on solid porous organic and/or inorg. sorbents pretreated with solns. of organic and/or inorg. compds. of neutral, acidic, or basic character and their mixts. The sorbents can be zeolites, silica gel, alumina, MgO, diatomite, activated charcoal, brown coal preps., anion or cation exchangers, amphotolytes, and porous polystyrene, polypropylene, or urea-formaldehyde resins. Pretreatment with organic compds. can involve amines, amides, polysaccharides, polyalkylene glycols, crown ethers, cryptands, surfactants, polyalkylene polyamines, carboxylic acids, alcs., esters, and their mixts. Pretreatment with inorg. compds. can involve acids, alkalis, salts, and their mixts. Examples of the used compds. include  $\alpha$ -,  $\beta$ -, and  $\gamma$ -cyclodextrin, starch, 15-crown-5 and dibenzo-18-crown-6 ethers, Kryptofix 221 and 222 cryptands, Neonol AF9-12, polyethylene glycol PEG-13, acetamide, urotropin, oxyethylated (n=6)  $\beta$ -cyclodextrin, polyvinyl alc., EDTA, acetic acid, glycerol, sunflower oil, NaOH, Na carbonate and bicarbonate, K carbonate and bicarbonate, ammonium carbonate and bicarbonate, Ag nitrate, and Na acetate. The necessary solvents can include water, ethanol, methanol, Me formate, di-Et ether, and their mixts. The sorbents can be pretreated in

(post-harvest qualities enhancement of mango fruit by  
vacuum infiltration treatment with 1-methylcyclopropene)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 2 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 9

ACCESSION NUMBER: 2002:154634 HCPLUS

DOCUMENT NUMBER: 137:278130

TITLE: Ethylene involvement in chilling injury symptoms of avocado during cold storage

AUTHOR(S): Pesis, Edna; Ackerman, Miriam; Ben-Arie, Rosa; Feygenberg, Oleg; Feng, Xuqiao; Apelbaum, Akiva; Goren, Raphael; Prusky, Dov

CORPORATE SOURCE: Department of Postharvest Science of Fresh Produce, The Volcani Center, A.R.O., Bet Dagan, 50250, Israel

SOURCE: Postharvest Biology and Technology (2002), 24(2), 171-181

PUBLISHER: CODEN: PBTEED; ISSN: 0925-5214  
Elsevier Science Ireland Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Application of exogenous ethylene, irresp. of the method of application, caused intensification of mesocarp **discoloration** in avocado fruit (*Persea americana* Mill.) during cold storage of all cultivars tested. Ettinger fruit treated with Ethrel (2-chloroethyl phosphonic acid) prior to packing and storage developed severe chilling injury (CI) symptoms, expressed as mesocarp **discoloration** after 3 wk at 5°C. Fuerte fruit treated with ethylene gas (100 µl l-1) for 24 h at 20°C prior to storage at 5°C exhibited mesocarp **discoloration**, which increased dramatically during shelf life at 20°C. Fuerte fruit treated in cold storage with a continuous low ethylene dose (4 µl l-1) developed severe browning in the fruit pulp after 3 wk at 5°C. Hass fruit treated with 50 µl l-1 ethylene, for 12, 24 or 48 h at 5°C showed a gradual increase in mesocarp **discoloration** after 3 wk in cold storage plus shelf life; the 48 h ethylene-treated fruit exhibited the most severe pulp browning. Use of absorbent sachets that removed ethylene from modified atmospheric (MA) packaging reduced mesocarp **discoloration** and decay development in Hass fruit after 5 wk storage at 5°C. Application of 1-methylcyclopropene (1-MCP), reduced mesocarp **discoloration**, decay development and polyphenol oxidase activity, whereas this enzyme activity was induced in ethylene-treated fruits that were cold stored for 4 wk.

CC 17-10 (Food and Feed Chemistry)

ST avocado chilling injury ethylene1MCP browning polyphenol oxidase

IT Temperature effects, biological

(cold; ethylene involvement in chilling injury of avocado during cold storage and effects of 1-methylcyclopropene and modified atmospheric packaging)

AUTHOR(S): Wang, B. G.; Jiang, W. B.; Liu, H. X.; Lin, L.; Wang, J. H.

CORPORATE SOURCE: College of Food Science and Nutritional Engineering, China Agricultural University, Beijing, 100083, Peop. Rep. China

SOURCE: Journal of Horticultural Science & Biotechnology (2006), 81(1), 163-167

CODEN: JHSBFA; ISSN: 1462-0316

PUBLISHER: Headley Brothers Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB To improve the efficacy of 1-methylcyclopropene (1-MCP) treatment of mango fruit, mature green mango fruit (*Mangifera indica* L. cv. 'Guifei') were treated with 0.1, 1.0 or 5.0  $\mu$ l 1-1 1-MCP for 6 h, or with 1.0  $\mu$ l 1-1 1-MCP for 1, 6 or 12 h under vacuum (-80 kPa). Fruit firmness was retained by vacuum treatment with 1-MCP. Levels of 1-MCP as low as 0.1  $\mu$ l 1-1 effectively prevented fruit softening. The shelf-life of mangoes treated with 5.0  $\mu$ l 1-1 1-MCP for 6 h could be extended from 8 d to 12 d after treatment. The duration of vacuum treatment of fruit with 1.0  $\mu$ l 1-1 1-MCP could be as short as 1 h, to prevent softening effectively. Increases in total soluble solids contents and the degradation of protopectin were significantly delayed by treating fruit with 1.0  $\mu$ l 1-1 1-MCP under vacuum for 6 h. Chlorophyll degradation in the peel was inhibited by 1-MCP-treatment. Titratable acidity and the ascorbic acid content of fruit did not change significantly after 1-MCP-treatment. The eating quality of 1-MCP-treated fruit, stored for 12 d, was almost the same as that of control fruit stored for 8 d.

CC 17 (Food and Feed Chemistry)

ST fruit softening mango *Mangifera* vacuum infiltration methylcyclopropene

IT INDEXING IN PROGRESS

IT Food preservation

    Food preservatives

*Mangifera indica*

    Vacuum

        (post-harvest qualities enhancement of mango fruit by vacuum infiltration treatment with 1-methylcyclopropene)

IT Chlorophylls

    Vitamins

    RL: BSU (Biological study, unclassified); BIOL (Biological study) (post-harvest qualities enhancement of mango fruit by vacuum infiltration treatment with 1-methylcyclopropene)

IT Acidity

    (titratable; post-harvest qualities enhancement of mango fruit by vacuum infiltration treatment with 1-methylcyclopropene)

IT Solids

    (total soluble; post-harvest qualities enhancement of mango fruit by vacuum infiltration treatment with 1-methylcyclopropene)

IT 9012-27-5, Protopectin

    RL: BSU (Biological study, unclassified); BIOL (Biological study) (post-harvest qualities enhancement of mango fruit by vacuum infiltration treatment with 1-methylcyclopropene)

IT 3100-04-7, 1-Methylcyclopropene

    RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses) (post-harvest qualities enhancement of mango fruit by vacuum infiltration treatment with 1-methylcyclopropene)

IT 3100-04-7, 1-Methylcyclopropene

    RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)

IT Browning (food)  
 Decay (biological)  
 Food packaging  
 Food texture  
 Persea americana  
 Respiration, plant  
 Storage  
 (ethylene involvement in chilling injury of avocado during cold storage and effects of 1-methylcyclopropene and modified atm . packaging)

IT Growth and development, plant  
 (fruit ripening; ethylene involvement in chilling injury of avocado during cold storage and effects of 1-methylcyclopropene and modified atmospheric packaging)

IT Plant tissue  
 (mesocarp; ethylene involvement in chilling injury of avocado during cold storage and effects of 1-methylcyclopropene and modified atmospheric packaging)

IT Atmosphere (environmental)  
 (modified; ethylene involvement in chilling injury of avocado during cold storage and effects of 1-methylcyclopropene and modified atmospheric packaging)

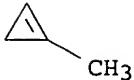
IT 9002-10-2, Polyphenol oxidase  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (ethylene involvement in chilling injury of avocado during cold storage and effects of 1-methylcyclopropene and modified atm . packaging)

IT 74-85-1, Ethylene, biological studies  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (ethylene involvement in chilling injury of avocado during cold storage and effects of 1-methylcyclopropene and modified atm . packaging)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (ethylene involvement in chilling injury of avocado during cold storage and effects of 1-methylcyclopropene and modified atm . packaging)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (ethylene involvement in chilling injury of avocado during cold storage and effects of 1-methylcyclopropene and modified atm . packaging)

RN 3100-04-7 HCAPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 3 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 13  
 ACCESSION NUMBER: 1999:377963 HCAPLUS  
 DOCUMENT NUMBER: 131:298846  
 TITLE: Extension of the shelf life of banana fruit by 1-methylcyclopropene in combination with

AUTHOR(S): polyethylene bags  
 Jiang, Yueming; Joyce, Daryl C.; Macnish, Andrew J.  
 CORPORATE SOURCE: South China Institute of Botany, Chinese Academy of Sciences, Canton, Peop. Rep. China  
 SOURCE: Postharvest Biology and Technology (1999), 16(2), 187-193  
 CODEN: PBTEED; ISSN: 0925-5214  
 PUBLISHER: Elsevier Science Ireland Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The effect of the new anti-ethylene compound 1-methylcyclopropene (1-MCP) in combination with polyethylene bags on the ripening of harvested banana fruit was investigated. 1-MCP treatment delayed peel color change and fruit softening, and extended shelf life in association with suppression of respiration and C<sub>2</sub>H<sub>4</sub> evolution. Banana fruit ripening was delayed when exposed to 0.01-1.0  $\mu$ L 1-MCP/l for 24 h, and increasing concns. of 1-MCP were generally more effective for longer periods of time. Similar results were obtained with fruit sealed in polyethylene bags (0.03 mm thick) containing 1-MCP at various concns., but longer delays in ripening were achieved. The greatest longevity of about 58 days was realized by packing fruit in sealed polyethylene bags with 1-MCP at either of 0.5 or 1.0  $\mu$ L/L. Analyses of C<sub>2</sub>H<sub>4</sub> and CO<sub>2</sub> concns. within polyethylene bags confirmed that 1-MCP suppressed both C<sub>2</sub>H<sub>4</sub> evolution and respiration. Thus, application of 1-MCP in combination with the use of polyethylene bags can greatly extend the postharvest life of banana fruit.

CC 17-10 (Food and Feed Chemistry)  
 Section cross-reference(s): 11

ST ethylene methylcyclopropene banana fruit ripening;  
 banana fruit ripening methylcyclopropene polyethylene bag

IT Food packaging materials  
 (bags; extension of shelf life of banana fruit by methylcyclopropene in combination with polyethylene bags)

IT Banana (*Musa acuminata*)  
 Respiration, plant  
 (extension of shelf life of banana fruit by methylcyclopropene in combination with polyethylene bags)

IT Growth and development, plant  
 (fruit ripening; extension of shelf life of banana fruit by methylcyclopropene in combination with polyethylene bags)

IT Atmosphere (environmental)  
 (modified; extension of shelf life of banana fruit by methylcyclopropene in combination with polyethylene bags)

IT 9002-88-4, Polyethylene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (bags; extension of shelf life of banana fruit by methylcyclopropene in combination with polyethylene bags)

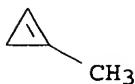
IT 3100-04-7, 1-Methylcyclopropene  
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (extension of shelf life of banana fruit by methylcyclopropene in combination with polyethylene bags)

IT 74-85-1, Ethene, biological studies  
 RL: BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative)  
 (extension of shelf life of banana fruit by methylcyclopropene in combination with polyethylene bags)

in air and controlled atmospheric (CA). For each cultivar the first 2 picks were within the com. period for long-term storage whereas the third picks were 2 wk later than advised for storage. 1-MCP was applied at 500 and 1000 nL L-1 for 12 h at 20°C or 24 h at 3.5°C. Fruit quality was assessed after 60, 120 and 180 d ('Cox') or after 90, 180 and 270 d ('Bramley') of air and CA storage followed by a further 7 d in air at 20°C. In 'Cox' the most notable effect of 1-MCP was the improved firmness of fruit in air and CA (<1 kPa CO<sub>2</sub> + 1.2 kPa O<sub>2</sub>) storage at 3°C and 3.5°C resp. Benefits of 1-MCP diminished with harvest delay and time in store. The quality of air-stored fruit after 60 d was comparable with that of CA-stored untreated fruit after 180 d. 1-MCP promoted core flush in 'Cox' apples stored in air for 120 d and in CA-stored fruit after 180 d. There was no consistent effect of dose rate of 1-MCP on fruit quality although application of 1-MCP at 20°C was generally less effective than at 3.5°C although the differences were small. 1-MCP can provide a 30-day extension to the life of air-stored fruit provided that fruit are harvested at maturity appropriate for long-term storage. The improvement in the firmness of CA-stored 'Cox' apples treated with 1-MCP will help to resolve consumer concerns about the texture of the UK's premier dessert cultivar. 'Bramley' apples were particularly responsive to 1-MCP. Quality benefits included greater retention of greenness, firmness and acidity and a reduction in the amount of rotting and superficial scald. Benefits of 1-MCP diminished with harvest delay and time in store. The quality of air-stored (3°C) fruit after 90 d was comparable with that of CA-stored (4°C) untreated fruit after 270 d. 1-MCP increased slightly the incidence of 'corky core' a minor disorder found in the core area of the fruit. Apart from a slight increase in firmness with the higher rate of 1-MCP there was no affect of dose rate and, in contrast to 'Cox', application of 1-MCP at 20°C was more effective than at 3.5°C in retaining firmness and acidity and retarding scald. 1-MCP controlled scald in fruit picked at the optimum time and stored in 9 kPa CO<sub>2</sub> + 12 kPa O<sub>2</sub> (9/12) for 180 d and in 5 kPa CO<sub>2</sub> + 1 kPa O<sub>2</sub> (5/1) for 270 d. 1-MCP can provide a useful (30-day) extension to the life of air-stored fruit provided that fruit are harvested at maturity appropriate for long-term storage. It may also obviate the need for DPA treatment for fruit stored in 9/12 and 5/1 CA storage for up to 6 and 9 mo resp.

CC 17-10 (Food and Feed Chemistry)  
 ST apple storage scald methylcyclopropene  
 IT Malus  
     (disease, scald; storage quality improvement of apples by use of 1-MCP (SmartFresh))  
 IT Food preservation  
     Food texture  
     Malus pumila  
     Storage  
         (storage quality improvement of apples by use of 1-MCP (SmartFresh))  
 IT 3100-04-7, 1-MCP  
     RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
         (storage quality improvement of apples by use of 1-MCP (SmartFresh))  
 IT 3100-04-7, 1-MCP  
     RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
         (storage quality improvement of apples by use of 1-MCP (SmartFresh))

RN 3100-04-7 HCAPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 51 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2001:679283 HCAPLUS  
 DOCUMENT NUMBER: 136:215770  
 TITLE: Harvest maturity, storage temperature, and 1-MCP application frequency alter firmness retention and chlorophyll fluorescence of "redchief delicious" apples  
 AUTHOR(S): Mir, Nazir A.; Curell, Erin; Khan, Najma; Whitaker, Melissa; Beaudry, Randolph M.  
 CORPORATE SOURCE: Department of Horticulture, Michigan State University, East Lansing, MI, 48824-1325, USA  
 SOURCE: Journal of the American Society for Horticultural Science (2001), 126(5), 618-624  
 CODEN: JOSHB5; ISSN: 0003-1062  
 PUBLISHER: American Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Fruit of "Redchief Delicious" apple [Malus sylvestris (L) Mill. var. domestica (Borkh.) Mansf.] were harvested 1 wk before the climacteric (harvest 1), at the onset of the climacteric (harvest 2), and 1 wk after the onset of the climacteric (harvest 3). Fruit were stored at 0, 5, 10, 15, or 20 °C and were treated with 0.7 µL·L<sup>-1</sup> 1-methylcyclopropene (1-MCP) on a once-per-week, once-per-2-wk, once-per-month, and once-per-year basis or were left nontreated. The initial 1-MCP treatment was at 20 °C and subsequent applications were at storage temps. The compound slowed softening at all temps. relative to nontreated fruit, however as temperature decreased, the benefits of 1-MCP application became less pronounced.

Effectiveness of 1-MCP declined slightly as harvest maturity increased. Efficacy of 1-MCP treatment increased with greater frequency of application at 5, 10, 15, and 20 °C, but not at 0 °C. Fruit stored without refrigeration (20 °C) for more than 100 days did not soften significantly when treated once per wk with 1-MCP. However, decay was a significant problem for treated and nontreated fruit stored at temps. >5 °C; 1-MCP application reduced, but did not prevent decay. Rate of decline in titratable acidity increased with storage temperature and 1-MCP had no significant effect on retarding the decline in acid content. Minimal (F<sub>0</sub>) and maximal (F<sub>m</sub>) chlorophyll fluorescence was altered markedly by 1-MCP application, but the ratio of (F<sub>m</sub>-F<sub>0</sub>)/F<sub>m</sub> was only slightly affected. The most effective 1-MCP treatment frequency was once per wk and, at all elevated temps. (5, 10, 15, and 20 °C), slowed loss of firmness to a greater extent than refrigeration (0 °C) alone. Application of 1-MCP resulted in greater retention of firmness than controlled atmospheric (CA) with O<sub>2</sub> and CO<sub>2</sub> at 1.5 kPa and 3 kPa, resp. Data suggest that 1-MCP application, has the potential to reduce reliance on refrigeration and CA storage for maintaining firmness of

Adult  
 Cholesterol: BL, blood  
 Chronic Disease  
 Creatinine: BL, blood  
 English Abstract  
 Enzyme-Linked Immunosorbent Assay  
 \*Graft Rejection: ME, metabolism  
 Humans  
 \*Kidney Transplantation: PH, physiology  
 Middle Aged  
 \*Monocyte Chemoattractant Protein-1: BL, blood  
 \*Monocyte Chemoattractant Protein-1: UR, urine  
 CAS REGISTRY NO.: 57-88-5 (Cholesterol); 60-27-5 (Creatinine)  
 CHEMICAL NAME: O (Monocyte Chemoattractant Protein-1)

L96 ANSWER 65 OF 87 MEDLINE on STN  
 ACCESSION NUMBER: 97368630 MEDLINE  
 DOCUMENT NUMBER: PubMed ID: 9225244  
 TITLE: The total chemical synthesis of monocyte chemotactic protein-1 (MCP-1).  
 AUTHOR: Brown A R; Covington M; Newton R C; Ramage R; Welch P  
 CORPORATE SOURCE: Department of Chemistry, University of Edinburgh, UK.  
 SOURCE: Journal of peptide science : an official publication of the European Peptide Society, (1996 Jan-Feb) Vol. 2, No. 1, pp. 40-6.  
 PUB. COUNTRY: Journal code: 9506309. ISSN: 1075-2617.  
 DOCUMENT TYPE: ENGLAND: United Kingdom  
 LANGUAGE: Journal; Article; (JOURNAL ARTICLE)  
 FILE SEGMENT: English  
 ENTRY MONTH: Priority Journals  
 ENTRY DATE: 199710  
 Entered STN: 24 Oct 1997  
 Last Updated on STN: 24 Oct 1997  
 Entered Medline: 15 Oct 1997

ABSTRACT:  
 The affinity-based N (alpha)-amino protecting group tetrabenzo[a,c,g,i]fluorenyl-17 methoxycarbonyl (Tbfmoc) has been utilized as a hydrophobic probe to allow the simple, quick and highly effective isolation of a 76 residue cysteine-containing protein (MCP-1). The base-labile Tbfmoc group can be removed under very mild conditions, which preserve the thiol-containing protein in the reduced state. Oxidative folding was then used to furnish the biologically active beta-chemokine MCP-1.

CONTROLLED TERM: Amino Acid Sequence  
 Chromatography, High Pressure Liquid  
 Cloning, Molecular  
 Humans  
 In Vitro  
 Models, Chemical  
 Molecular Sequence Data  
 \*Monocyte Chemoattractant Protein-1: CS, chemical synthesis  
 Monocyte Chemoattractant Protein-1: GE, genetics  
 Monocyte Chemoattractant Protein-1: PD, pharmacology  
 Monocytes: DE, drug effects  
 Peptide Mapping  
 Research Support, Non-U.S. Gov't  
 Spectrum Analysis, Mass  
 CHEMICAL NAME: O (Monocyte Chemoattractant Protein-1)

L96 ANSWER 66 OF 87 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on  
 STN DUPLICATE 11

ACCESSION NUMBER: 2001:430595 BIOSIS  
 DOCUMENT NUMBER: PREV200100430595  
 TITLE: Effects of 1-methylcyclopropene alone  
 and in combination with polyethylene bags on the  
 postharvest life of mango fruit.  
 AUTHOR(S): Jiang, Y.; Joyce, D. C. [Reprint author]  
 CORPORATE SOURCE: Postharvest Technology Laboratory, Cranfield University,  
 Silsoe, Cranfield, Bedfordshire, MK45 4DT, UK  
 d.joyce@cranfield.ac.uk  
 SOURCE: Annals of Applied Biology, (December, 2000) Vol. 137, No. 3, pp. 321-327. print.  
 CODEN: AABIAV. ISSN: 0003-4746.

DOCUMENT TYPE: Article

LANGUAGE: English

ENTRY DATE: Entered STN: 12 Sep 2001

Last Updated on STN: 22 Feb 2002

ABSTRACT: Experiments were conducted to determine how 1-methylcyclopropene (1-MCP) treatments influence ethylene-stimulated ripening of harvested mango cv. Zihua fruit at 20°C. The ripening response of fungicide (prochloraz) treated fruit was characterised following various 1-MCP treatments in sealed jars followed by storage in polyethylene bags and/or subsequent ethephon (ethylene) exposure. Exposure of fruit to increasing concentrations of 1-MCP for 12 h resulted in the reduced softening of produce when subsequently held in air for 7 days after ethephon treatment. Application levels of between 1 and 100 µl litre<sup>-1</sup> 1-MCP had increasing impact, while 200 µl litre<sup>-1</sup> 1-MCP apparently began to approach response saturation. Exposure of fruit to 50 or 100 µl litre<sup>-1</sup> concentrations of 1-MCP for periods from 1 to 24 h subsequently resulted in reduced softening of produce when held in air for 7 days after ethephon treatment. Increasing periods of exposure from 1 to 12 h had increasing impact, while exposure times greater than 12 h appeared to reach saturation. In the absence of ethephon-stimulation, the natural ripening of mangoes held in polyethylene bags was delayed by prior exposure to 100 µl litre<sup>-1</sup> 1-MCP for 12 h. Extended holding of 1-MCP treated and non-1-MCP treated control fruit in polyethylene bags encouraged physiological and pathological deterioration. Following exposure to 100 µl litre<sup>-1</sup> 1-MCP for 12 h, mango fruit held for 10 days in polyethylene bags showed a delay in the onset of ripening relative to bagged but non-1-MCP treated control fruit. Treatment with 1-MCP allowed storage of mango fruit in plastic bags at 20°C for 30 days. Observations suggest that 1-MCP treatments do not adversely influence the quality of the post-storage ethephon-ripened fruit. Thus, application of 1-MCP in combination with the use of polyethylene bags can extend the postharvest life of mango fruit at ambient temperature. Treatments that extend postharvest life are important in developing countries, such as China, where the cold chain infrastructure is often lacking.

CONCEPT CODE: Biochemistry studies - General 10060  
 Metabolism - General metabolism and metabolic pathways 13002  
 Food technology - General and methods 13502  
 Plant physiology - Metabolism 51519

INDEX TERMS: Major Concepts

Foods; Metabolism

INDEX TERMS: Chemicals & Biochemicals

1-methylcyclopropene [1-

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 K?/AU  
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=> d que nos L88

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 L57 96 SEA FILE=HCAPLUS ABB=ON PLU=ON HAYAMA H?/AU OR HIROKO H?/AU  
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 L88 1 SEA (L56 OR L57 OR L58) AND (L84 OR L85)

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L91 1 L79 OR L87 OR L88

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PROCESSING COMPLETED FOR L89

PROCESSING COMPLETED FOR L90

PROCESSING COMPLETED FOR L91

L92 21 DUP REM L89 L90 L91 (19 DUPLICATES REMOVED)

ANSWERS '1-15' FROM FILE HCAPLUS

ANSWERS '16-21' FROM FILE BIOSIS

=&gt; d ibib abs hitind hitstr L92 1-15; d iall L92 16-21

L92 ANSWER 1 OF 21 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1

ACCESSION NUMBER: 2005:47856 HCAPLUS

DOCUMENT NUMBER: 143:54100

TITLE: Partial cloning and expression analysis of genes  
encoding NAD+-dependent sorbitol dehydrogenase in pear  
bud during flower bud formationAUTHOR(S): Ito, Akiko; Hayama, Hiroko;  
Kashimura, YoshikiCORPORATE SOURCE: Department of Plant, Cell and Environment, National  
Institute of Fruit Tree Science, National Agriculture  
and Bio-oriented Research Organization, Tsukuba,  
Ibaraki, 305-8605, JapanSOURCE: Scientia Horticulturae (Amsterdam, Netherlands)  
(2005), 103(4), 413-420

CODEN: SHRTAH; ISSN: 0304-4238

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Partial fragments of five NAD+-dependent sorbitol dehydrogenase (NAD-SDH)  
genes were isolated from the developing buds of Japanese pear (*Pyrus*  
*pyrifolia* cv. Kosui) by RT-PCR (tentatively named PpySDH1-5). The derived  
amino acid sequences of PpySDH1-5 have 94 to 98% homol. with NAD-SDH genes  
from apple. PpySDH1-4 were clearly distinguished from PpySDH5 based on  
primary structure, which showed 88-95% identity with each other, but only  
69-71% identity with PpySDH5. Shading of limbs for 20 days increased  
NAD-SDH enzymic activity in the buds and correspondingly increased the  
expression detected by PpySDH1. On the other hand, shoot bending  
increased NAD-SDH activity in lateral buds, and also increased the  
expression detected by PpySDH1. The expression of PpySDH5 was barely  
detected in any of these tissues. These results suggest that PpySDH1-5  
encodes the isoforms of NAD-SDH protein which can be categorized into at  
least two groups and that PpySDH5 may not be requisite to bud growth,  
though some of the other NAD-SDH gene(s) may be. The increases of NAD-SDH  
activity, both by shading and shoot bending, are suspected to be regulated  
at the transcriptional level.

CC 3-3 (Biochemical Genetics)

=> file registry  
FILE 'REGISTRY' ENTERED AT 13:02:10 ON 06 SEP 2006  
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Property values tagged with IC are from the ZIC/VINITI data file provided by InfoChem.

STRUCTURE FILE UPDATES: 5 SEP 2006 HIGHEST RN 905905-44-4  
DICTIONARY FILE UPDATES: 5 SEP 2006 HIGHEST RN 905905-44-4

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH June 30, 2006

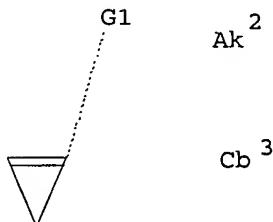
Please note that search-term pricing does apply when conducting SmartSELECT searches.

REGISTRY includes numerically searchable data for experimental and predicted properties as well as tags indicating availability of experimental property data in the original document. For information on property searching in REGISTRY, refer to:

<http://www.cas.org/ONLINE/UG/regprops.html>

=> d stat que L17  
L15 STR

H<sup>1</sup>



G1 [@1], [@2], [@3]

STRUCTURE  
Query

Structure attributes must be viewed using STN Express query preparation.  
L17 326 SEA FILE=REGISTRY SSS FUL L15

100.0% PROCESSED 533158 ITERATIONS  
SEARCH TIME: 00.00.04

326 ANSWERS

=> => =>  
=> file hcaplus  
FILE 'HCAPLUS' ENTERED AT 13:06:58 ON 06 SEP 2006  
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AUTHOR  
SEARCH

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FILE COVERS 1907 - 6 Sep 2006 VOL 145 ISS 11  
 FILE LAST UPDATED: 5 Sep 2006 (20060905/ED)

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This file contains CAS Registry Numbers for easy and accurate substance identification.

'OBI' IS DEFAULT SEARCH FIELD FOR 'HCAPLUS' FILE

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L57	96 SEA FILE=HCAPLUS ABB=ON	PLU=ON	HAYAMA H?/AU OR HIROKO H?/AU
L58	5064 SEA FILE=HCAPLUS ABB=ON	PLU=ON	ITO A?/AU OR AKIKO I?/AU
L59	12 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L56 AND (L57 OR L58)
L60	15 SEA FILE=HCAPLUS ABB=ON	PLU=ON	L57 AND L58
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L21	3796 SEA FILE=HCAPLUS ABB=ON	PLU=ON	FOOD PRESERVATIVES/CT
L22	3084 SEA FILE=HCAPLUS ABB=ON	PLU=ON	FOOD PACKAGING/CT
L23	173776 SEA FILE=HCAPLUS ABB=ON	PLU=ON	?PRESERV?/BI
L24	577173 SEA FILE=HCAPLUS ABB=ON	PLU=ON	(RIPE# OR RIPEN? OR DISCOLOR? OR BROWN? OR DECAY? OR DETERIORAT?)/BI
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L31	QUE ABB=ON PLU=ON	VEGETABL?/BI	
L32	QUE ABB=ON PLU=ON	ORNAMENT?/BI	
L33	QUE ABB=ON PLU=ON	FLOWER?/BI	
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days. In this study, a pretreatment called 'TARI's onc 1' and 1-  
\*\*\*MCP\*\*\* (1-Methylcyclopropene) were used to prolong the  
vase life of these flowers which would be fumigated with MBr  
(24.5g/m<sup>3</sup>) after transportation. The result indicated that the treatment not  
only increased the vase life of fumigated flowers for 1 to 2 days,  
but also improved the quality of flowers close to un-fumigated ones.  
Fumigations with the mixture of MBr (10g/m<sup>3</sup>) and phosphine (3g/m<sup>3</sup>), or only  
phosphine (5g/m<sup>3</sup>) under low pressure (250 torr) before  
transportation were also tested. These low pressure  
fumigations shortened the vase life of Oncidium cut flower for about  
0.5 to 1 days. Flowers fumigated with 'TARI's onc 1' and 1  
-MCP under low pressure resulted in 100%  
mortality of *Spodoptera litura*, *Aphis gossypii* and *Thrips hawaiiensis*.

CONCEPT CODE: Biochemistry studies - General 10060  
Horticulture - Flowers and ornamentals 53010  
Horticulture - Miscellaneous and mixed crops 53012  
Pest control: general, pesticides and herbicides 54600  
Economic entomology - General 60002  
Economic entomology - Field, flower and truck crops 60004  
Invertebrates: comparative, experimental morphology,  
physiology and pathology - Insecta: physiology 64076  
INDEX TERMS: Major Concepts

INDEX TERMS: Major Concepts  
Economic Entomology; Horticulture (Agriculture); Pest Assessment Control and Management

ASSESSMENT, CONTROL AND MANAGEMENT  
INDEX TERMS: Chemicals & Biochemicals

1-methylcyclopropene; TARI's onc 1; methyl bromide: fumigant; phosphine: fumigant

INDEX TERMS: Methods & Equipment  
quarantine fumigation: applied and field techniques;  
simulated flower transport: applied and field  
techniques

GEOGRAPHICAL TERMS: Japan (Asia, Palearctic region); Taiwan (Asia, Palearctic region)

Organism Name  
Aphis gossypii (species): pest

## Taxa Notes

### Animals, Arthropods, Insects, Invertebrates

ORGANISM: Classifier  
Lepidoptera 75330  
Super Taxa  
Insecta; Arthropoda; Invertebrata; Animalia

Organism Name  
Spodoptera litura (species): pest

1-hour, although shrivelling and skin scald were unaffected by the treatment. When extending 1-MCP exposure for 6 hours in mature green \*\*\*fruit\*\*\*, the treatment also delayed other ripening associated events as flesh softening but differences were not significant to privilege longer exposures. Mature fruits showed higher weight loss compared with green mature fruits irrespective of duration of exposure to \*\*\*1\*\*\*-MCP, and similar quality loss in terms of anthracnose, skin scald, and shrivelling. These results confirm that 1 MCP \*\*\*preserved\*\*\* araza fruit quality particularly when harvested in a green mature stage. However, noticeable weight loss, softening and anthracnose developed after 1 week of storage particularly in mature \*\*\*fruit\*\*\* or after a shelf-life period. This fact limits the use of \*\*\*1\*\*\*-MCP treatments alone for prolonging storage life of araza \*\*\*fruit\*\*\* without coadjutants as modified atmosphere packaging.

CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520  
 Food technology - General and methods 13502  
 Food technology - Fruits, nuts and vegetables 13504  
 Agronomy - Miscellaneous and mixed crops 52502  
 Horticulture - Miscellaneous and mixed crops 53012

INDEX TERMS: Major Concepts  
 Agrichemicals; Foods; Horticulture (Agriculture)

INDEX TERMS: Chemicals & Biochemicals  
 1-MCP [1-methylcyclopropene]: agrichemical

INDEX TERMS: Methods & Equipment  
 modified atmospheric packaging:  
 applied and field techniques; refrigerated storage:  
 applied and field techniques

INDEX TERMS: Miscellaneous Descriptors  
 araza fruit: fruit, harvest stage,  
 quality changes, shelf life

REGISTRY NUMBER: 3100-04-7 (1-MCP)  
 3100-04-7 (1-methylcyclopropene)  
 )

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ACCESSION NUMBER: 2003:483165 BIOSIS  
 DOCUMENT NUMBER: PREV200300483165  
 TITLE: Effect of 'TARI's onc 1' and 1-MCP on the quality of Oncidium cut flowers after simulated transportation and quarantine fumigation.  
 AUTHOR(S): Huang, Chao-Chia [Reprint Author]; Tu, Wu-Chun; Chen, Hon-Yi; Tsai, Chin-Yu [Reprint Author]; Lai, Shu-Fen; Huang, Hui-Sui [Reprint Author]  
 CORPORATE SOURCE: Taiwan Agricultural Research Institute, Council of Agriculture, Executive Yan, Taichung, Taiwan  
 SOURCE: Journal of the Chinese Society for Horticultural Science, (March 2003) Vol. 49, No. 1, pp. 55-62. print.  
 ISSN: 0529-6544 (ISSN print).  
 DOCUMENT TYPE: Article  
 LANGUAGE: Chinese  
 ENTRY DATE: Entered STN: 15 Oct 2003  
 Last Updated on STN: 15 Oct 2003  
 ABSTRACT: Exportation of Taiwan Oncidium cut flowers have been increasing rapidly in these few years. These flowers are mainly exported to Japan. 20-30% of them have been fumigated with MBr (methyl bromide 84.5g/m<sup>3</sup>) due to plant pests. Their vase lives were shortened for about 1 to 2

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 ACH## OR PLUM# OR MELON# OR JAPAN? APRICOT?)/BI  
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 L65 1 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND EMBASE/LC  
 L66 6 SEA FILE=REGISTRY ABB=ON PLU=ON L17 AND BIOSIS/LC  
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 L70 9369 SEA L69  
 L71 462 SEA (L20 OR L21 OR L22 OR L23 OR L24) AND L70  
 L72 6 SEA L51 AND L71  
 L74 2 SEA L26 AND L71  
 L75 577 SEA (L30 OR L31 OR L32 OR L33 OR L34) AND L70  
 L76 11 SEA (L30 OR L31 OR L32 OR L33 OR L34) AND L70 AND (L51 OR L26)  
 L77 22 SEA (L71 OR L75) AND L25  
 L80 1 SEA (L56 OR L57 OR L58) AND (L72 OR L74 OR L76 OR L77)

=> s L78 or L80

L90 24 L78 OR L80

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 L79 1 SEA L61

=> d que nos L87

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OR L32 OR L33 OR L34)  
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 AND (L20 OR L21 OR L22 OR L23 OR L24) AND (L30 OR L31 OR L32  
 OR L33 OR L34)  
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 L52 45 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND (L18 OR L19)  
 L53 23 SEA FILE=HCAPLUS ABB=ON PLU=ON L52 AND (L43 OR L44)  
 L55 2 SEA FILE=HCAPLUS ABB=ON PLU=ON L53 AND L25  
 L56 125 SEA FILE=HCAPLUS ABB=ON PLU=ON KASHIMURA Y?/AU OR YOSHIKI  
 K?/AU  
 L57 96 SEA FILE=HCAPLUS ABB=ON PLU=ON HAYAMA H?/AU OR HIROKO H?/AU  
 L58 5064 SEA FILE=HCAPLUS ABB=ON PLU=ON ITO A?/AU OR AKIKO I?/AU  
 L62 1 SEA FILE=HCAPLUS ABB=ON PLU=ON (L56 OR L57 OR L58) AND (L39  
 OR L53 OR L40 OR L48 OR L55)

=> s L61 or L62

L89 15 L61 OR L62

=> file medline embase biosis agricola

FILE 'MEDLINE' ENTERED AT 13:07:01 ON 06 SEP 2006

FILE 'EMBASE' ENTERED AT 13:07:01 ON 06 SEP 2006  
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FILE 'AGRICOLA' ENTERED AT 13:07:01 ON 06 SEP 2006

=> d que nos L78

L56 125 SEA FILE=HCAPLUS ABB=ON PLU=ON KASHIMURA Y?/AU OR YOSHIKI  
 K?/AU  
 L57 96 SEA FILE=HCAPLUS ABB=ON PLU=ON HAYAMA H?/AU OR HIROKO H?/AU  
 L58 5064 SEA FILE=HCAPLUS ABB=ON PLU=ON ITO A?/AU OR AKIKO I?/AU  
 L59 12 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 AND (L57 OR L58)  
 L60 15 SEA FILE=HCAPLUS ABB=ON PLU=ON L57 AND L58  
 L61 15 SEA FILE=HCAPLUS ABB=ON PLU=ON (L59 OR L60)  
 L78 24 SEA L61

=> d que nos L80

L15 STR  
 L17 326 SEA FILE=REGISTRY SSS FUL L15  
 L20 6257 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PRESERVATION/CT  
 L21 3796 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PRESERVATIVES/CT  
 L22 3084 SEA FILE=HCAPLUS ABB=ON PLU=ON FOOD PACKAGING/CT  
 L23 173776 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESERV?/BI  
 L24 577173 SEA FILE=HCAPLUS ABB=ON PLU=ON (RIPE# OR RIPEN? OR DISCOLOR?  
 OR BROWN? OR DECAY? OR DETERIORAT?)/BI  
 L25 1267067 SEA FILE=HCAPLUS ABB=ON PLU=ON ?PRESSURE?/BI  
 L26 QUE ABB=ON PLU=ON (VACUUM# OR VACUO OR EVACUAT?)/BI



2 ( D1-Me )

IT 29663-07-8P, Methylcyclopropene  
 (preparation and complexation as agent to inhibit ethylene responses in  
 plants and plant products)

RN 29663-07-8 USPATFULL

CN Cyclopropene, methyl- (9CI) (CA INDEX NAME)



D1-Me

L96 ANSWER 83 OF 87 USPATFULL on STN  
 ACCESSION NUMBER: 2004:107328 USPATFULL  
 TITLE: Gas-release packet with frangible sub-packet  
 INVENTOR(S): Kelly, Robert Charles, Houston, TX, UNITED STATES  
 Miller, Drayton, Mobile, AL, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2004081727	A1	20040429
APPLICATION INFO.:	US 2002-277038	A1	20021021 (10)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	APPLICATION		
LEGAL REPRESENTATIVE:	FLEIT KAIN GIBBONS GUTMAN & BONGINI, COURVOISIER CENTRE II, SUITE 404, 601 BRICKELL KEY DRIVE, MIAMI, FL, 33131		
NUMBER OF CLAIMS:	19		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	5 Drawing Page(s)		
LINE COUNT:	333		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed is a gas-release packet, comprising a flexible gas-permeable material enclosing or comprising one or more liquid-filled frangible sub-packets and a gas-producing chemical composition that is activated when in contact with said liquid.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . or compositions thereof. Also disclosed are methods of inhibiting abscission in plants and methods of prolonging the life of cut flowers.

DETD . . . purpose, these dividing seals 5 being weak enough that they will break before the packet seals 4 upon application of pressure upon the gas-permeable packet 1. For example, a weak line of adhesive may be run down the center of the . . .

IT 124-38-9, Carbon dioxide, processes 2781-85-3, Cyclopropene  
 2781-85-3D, Cyclopropene, gaseous derivs.  
 (gas-release packet with frangible sub-packet)

IT 2781-85-3, Cyclopropene 2781-85-3D, Cyclopropene,

added, a ball valve connecting the vessel with the condenser is opened. Any pressure is then released by bubbling the gaseous methylcyclopropene product through a mixture of cyclodextrin dissolved in water (as explained later).

DETD . . . pH in the range of 3 to 5. The headspace gas in the reaction vessel is transferred by pulling a vacuum on the mixing vessel to 15 psi, closing the condenser/reaction vessel ball valve and opening the ball valve linking the . . .

DETD . . . and the gas flows to the mixing vessel. Once the initial headspace is transferred over to the mixing vessel, a vacuum will begin to be created in the reaction vessel which can be detected by reading the mounted pressure gauge. When this occurs, the reaction vessel is filled with nitrogen gas (99.95% pure) by closing any connections to the rest of the system, and allowing the nitrogen gas to enter through the nitrogen inlet valve when a slight vacuum occurs. Once the reaction vessel has been filled with nitrogen gas, which will be identifiable by reading the mounted pressure gauge, the headspace gas from the reaction vessel is once again transferred to the mixing vessel. The process is repeated until the mixing vessel is filled with gas as indicated by the pressure gauge. A minimum concentration of 80,000 ppm of methylcyclopropene is preferred in the mixing vessel at this step. This concentration. . . (preferably about 4° C.). Next, the contents in the mixing vessel, if containing the buffer solution, are filtered out by vacuum filtration, by connecting a vacuum pump at the bottom outlet of the mixing vessel, which will remove the buffer solution from the mixture while the. . .

DETD . . . reaction is displaced with a syringe or by sweeping with nitrogen through a condenser and cold trap, connected to a vacuum system into a flask containing approximately 50 to 200 grams of alpha-cyclodextrin and 50 to 200 ml of water buffered. . .

DETD . . . chilled to 4° C. and the contents mixed for 24 hours. Once the methylcyclopropene is trapped onto the cyclodextrin, the pressure fell from about 2 atmospheres to a vacuum. Nitrogen gas was then added to atmospheric pressure. The buffer solution was removed by filtering through a filtering bag within the vessel and the cyclodextrin cake was transferred. . .

IT 2781-85-3D, Cyclopropene, complexes 10016-20-3D,  $\alpha$ -Cyclodextrin, complexes with cyclopropene derivs. 12619-70-4D, Cyclodextrin, complexes with cyclopropene derivs. 255062-91-0D, complexes

(agents to inhibit ethylene responses in plants and plant products)

IT 29663-07-8P, Methylcyclopropene (preparation and complexation as agent to inhibit ethylene responses in plants and plant products)

IT 2781-85-3D, Cyclopropene, complexes 255062-91-0D, complexes

(agents to inhibit ethylene responses in plants and plant products)

RN 2781-85-3 USPATFULL

CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 255062-91-0 USPATFULL

CN Cyclopropene, dimethyl- (9CI) (CA INDEX NAME)

vapor pressure at normal working temperatures from 4 to 25° C., it quickly escapes into the atmosphere. By releasing methylcyclopropene from a . . .

SUMM . . . is used generically in the present invention to also include woody-stemmed plants in addition to field crops, potted plants, cut flowers, harvested fruits and vegetables and ornamentals. Some of the plants that can be treated by the methods of the present invention are listed below.

SUMM . . . initiated by either exogenous or endogenous sources of ethylene. Ethylene responses include, for example, (i) the ripening and/or senescence of flowers, fruits and vegetables, (ii) the abscission of foliage, flowers and fruit, (iii) the prolongation of the life of ornamentals, such as potted plants, cut flowers, shrubbery and dormant seedlings, (iv) the inhibition of growth in some plants such as the pea plant, and (v) the . . .

SUMM [0082] Vegetables which may be treated by the methods of the present invention to inhibit senescence include leafy green vegetables such as lettuce (e.g., *Lactuca sativa*), spinach (*Spinaca oleracea*) and cabbage (*Brassica oleracea*); various roots such as potatoes (*Solanum tuberosum*), . . .

SUMM [0083] Fruits which may be treated by the methods of the present invention to inhibit ripening include tomatoes (*Lycopersicon esculentum*), apples (*Malus domestica*), bananas (*Musa sapientum*), pears (*Pyrus communis*), papaya (*Carica papaya*), mangoes (*Mangifera indica*), peaches (*Prunus persica*), apricots (*Prunus armeniaca*), nectarines (*Prunus persica nectarina*), oranges (*Citrus* sp.), lemons (*Citrus limonia*), limes (*Citrus aurantifolia*), grapefruit (*Citrus paradisi*), tangerines (*Citrus nobilis deliciosa*), kiwi (*Actinidia chinensis*), melons such as cantaloupes (*C. cantalupensis*) and musk melons (*C. melo*), pineapples (*Ananas comosus*), persimmon (*Diospyros* sp.) and raspberries (e.g., *Fragaria* or *Rubus ursinus*), blueberries (*Vaccinium* sp.), green beans (*Phaseolus vulgaris*), members of the genus . . .

SUMM [0084] Ornamental plants which may be treated by the methods of the present invention to inhibit senescence and/or to prolong flower life and appearance (such as the delay of wilting), include potted ornamentals and cut flowers. Potted ornamentals and cut flowers which may be treated with the methods of the present invention include azalea (*Rhododendron* spp.), hydrangea (*Macrophylla hydrangea*), hibiscus (*Hibiscus* . . .

SUMM [0085] Plants which may be treated by the methods of the present invention to inhibit abscission of foliage, flowers and fruit include cotton (*Gossypium* spp.), apples, pears, cherries (*Prunus avium*), pecans (*Carica illinoensis*), grapes (*Vitis vinifera*), olives (e.g., *Olea europaea*), coffee (*Coffea arabica*), snapbeans (*Phaseolus vulgaris*), and weeping fig (*Ficus benjamina*), as well as dormant seedlings such as various fruit trees including apple, ornamental plants, shrubbery, and tree seedlings.

DETD . . . is attached to the main system. The reaction vessel, which already has been purged with nitrogen and has been partially evacuated, is opened to the powder addition vessel to allow the powder to fall into the reaction vessel with the aid. . . .

DETD . . . agitated for an additional 1-30 minutes, and preferably for 15 minutes, using the propeller mixer discussed above. A reaction vessel pressure of about two atmospheres is used in this example.

DETD . . . product, the nitrogen purge is stopped and water is added ranging from 0.00-1.47 liters by adding the water under positive pressure over a period of 1 hour. Once all the water has been

NUMBER OF CLAIMS: 32

EXEMPLARY CLAIM: 1

LINE COUNT: 1277

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention generally relates to the regulation of plant physiology, in particular to methods for inhibiting the ethylene response in plants or plant products, and has three embodiments. The first embodiment relates to methods of minimizing impurities capable of reversibly binding to plant ethylene receptor sites during the synthesis of cyclopropene and its derivatives such as methylcyclopropene, thereby avoiding the negative effects these impurities have on plants treated with cyclopropene and its derivatives. The second embodiment relates to complexes formed from molecular encapsulation agents such as cyclodextrin, and cyclopropene and its derivatives such as methylcyclopropene, in addition to cyclopentadiene and diazocyclopentadiene and their derivatives, thereby providing a convenient means for storing and transporting these compounds capable of inhibiting the ethylene response in plants, which are reactive gases and highly unstable because of oxidation and other potential reactions. The third embodiment relates to convenient methods of delivering to plants these compounds capable of inhibiting the ethylene response in the plants in order to extend their shelf life.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . or plant products, in order to prolong their shelf life. The invention relates to prolonging the shelf life of cut flowers and **ornamentals**, potted plants (edible and non-edible), transplants, and plant foods including **fruits**, **vegetables** and root crops.

SUMM . . . aspects of plant growth, development and senescence. The most important effects of ethylene include processes normally associated with senescence, particularly **fruit** ripening, **flower** fading and leaf abscission.

SUMM [0009] It is well known that ethylene can cause the premature death of plants including **flowers**, leaves, **fruits** and **vegetables**. It can also promote leaf yellowing and stunted growth as well as premature **fruit**, **flower** and leaf drop.

SUMM . . . S-adenosylmethione to 1-amino cyclopropane-1-carboxylic acid, the precursor to ethylene. Staby et al. ("Efficacies of Commercial Anti-ethylene Products for Fresh Cut **Flower**", Hort Technology, pp. 199-202, 1993) discuss the limitations of these ethylene synthesis inhibitors. Because ethylene syntheses inhibitors only inhibit a. . .

SUMM . . . STS can be used by growers, retailers and wholesalers as a liquid that is absorbed into the stems of the **flowers**. While STS is highly effective, it has a serious waste disposal problem. It is illegal to dispose of the silver. . .

SUMM . . . active agent in the complex, the complex (and hence the gaseous active agent) does not exhibit a very high vapor pressure and is therefore protected from oxidation and other chemical degradation reactions. A gaseous active compound such as cyclopropene or derivatives thereof is held in a caged molecule whereby the vapor pressure of the solid is very low due to the weak atomic forces (van de Waals and hydrogen binding). The binding of these gaseous active compounds with. . .

SUMM . . . of about 1:1 to about 4:1. The reaction temperature can range from about 20° to about 60° and the reaction pressure can range from about 1 to about 100 psi.

SUMM . . . active compound. Heating the water also facilitates a faster release of the active compound. Because methylcyclopropene has a high

gaseous derivs.

(gas-release packet with frangible sub-packet)

RN 2781-85-3 USPATFULL

CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 2781-85-3 USPATFULL

CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L96 ANSWER 84 OF 87 USPATFULL on STN

ACCESSION NUMBER: 2004:192647 USPATFULL

TITLE: Delivery systems for cyclopropene compounds

INVENTOR(S): Lamola, Angelo Anthony, Worcester, PA, United States

Jacobson, Richard Martin, Chalfont, PA, United States

Norris, Philip Roy, North Reading, MA, United States

PATENT ASSIGNEE(S): Rohm and Haas Company, Philadelphia, PA, United States  
(U.S. corporation)

NUMBER	KIND	DATE
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PATENT INFORMATION:	US 6770600	B1	20040803
APPLICATION INFO.:	US 2003-376992		20030228 (10)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	GRANTED		
PRIMARY EXAMINER:	Clardy, S. Mark		
LEGAL REPRESENTATIVE:	Vouros, James C., Rogerson, Thomas D.		
NUMBER OF CLAIMS:	13		
EXEMPLARY CLAIM:	1		
NUMBER OF DRAWINGS:	0 Drawing Figure(s); 0 Drawing Page(s)		
LINE COUNT:	668		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention relates to new delivery systems for cyclopropene compounds of a cyclopropene compound generator comprising at least one substrate, a material containing at least one cyclopropene compound and a release agent whereby at least one side of one substrate is coated with the material containing at least one cyclopropene compound and wherein when the material containing at least one cyclopropene compound is exposed to the release agent, a gaseous cyclopropene compound is released. The present invention also provides methods to release a cyclopropene compound from such a generator to deliver a cyclopropene compound to plants, fruits, flowers or vegetables to inhibit an ethylene response in the plants, fruits, flowers or vegetable.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB . . . invention also provides methods to release a cyclopropene compound from such a generator to deliver a cyclopropene compound to plants, fruits, flowers or vegetables to inhibit an ethylene response in the plants, fruits, flowers or vegetable.

SUMM . . . the form of a cartridge, preferably a self contained cartridge, which provides a convenient means for delivering cyclopropene compounds to **flowers, fruits, plants and vegetables** in order to preserve their same quality as when they were picked. Such cyclopropene compounds and their derivatives, such as methylcyclopropene, are capable of inhibiting the ethylene response in **flowers, fruits, plants and vegetables**. The cyclopropene compound generator is particularly useful where the **flowers, fruits, plants or vegetables** are stored in areas, such as railroad box cars, tractor trailer containers or land/sea containers because the cyclopropene compound generator.

SUMM It is well known that ethylene can cause the premature death of plants or plant parts including, for example, **flowers, leaves, fruits, and vegetables** through binding with certain receptors in the plant. Ethylene also promotes leaf yellowing and stunted growth as well as premature **fruit, flower, and leaf drop**. Because of these ethylene-induced problems, very active and intense research presently concerns the investigation of ways to.

SUMM . . . and thereby provide a convenient and safe means of storing, transporting and applying or delivering the active compounds to plants, **flowers, fruits or vegetables**. For the most active cyclopropene derivative disclosed in U.S. Pat. No. 5,518,988, 1-methylcyclopropene, the preferred molecular encapsulation agent is a cyclodextrin, with  $\alpha$ -cyclodextrin being the most preferred. The application or delivery of these active compounds to plants, **flowers, fruits or vegetables** is accomplished by simply adding water to the molecular encapsulation agent complex. The complex is prepared according to the methods.

SUMM . . . release agent and where the orientation of the container does not matter. This would allow a user to treat plants, **flowers, fruits, or vegetables** with the gaseous cyclopropene compound directly in shipping containers, rather than a large treatment container, chamber, or room.

SUMM . . . contains at least one pod. The substrate coated with the material containing at least one cyclopropene compound passes through a **pressure applying assembly**, such as a pair of rollers, that rupture the pod and spread the release agent to initiate the.

SUMM . . . can be carried out to completion in a reasonable period of time, such as the total storage time of the **flowers, fruits, plants or vegetables**.

SUMM . . . of sodium bicarbonate, 2.0 g of polyvinylpyrrolidinone, and 59 g of carboxymethylcellulose sodium salt is prepared. This solution is then **pressure coated** onto a porous paper substrate 10.0 m long, 10.0 cm wide and 0.43 mm thick. The coating is 0.10.

SUMM . . . g of sodium bicarbonate, 2.0 g of polyvinylpyrrolidinone, and 40.3 g of microcrystalline cellulose is prepared. This solution is then **pressure coated** onto a porous polyethylene film strip 10.0 m long, 10.0 cm wide and 0.22 mm thick. The coating is.

SUMM . . . of sodium bicarbonate, 2.0 g of polyvinylpyrrolidinone, and 59 g of carboxymethylcellulose sodium salt is prepared. This solution is then **pressure coated** onto a non-woven polyethylene substrate 10.0 m long, 2.0 cm wide and 0.24 mm thick. The coating is measured.

DETD . . . length of Release Agent Substrate A and is placed in a 10.0 m.sup.3 chamber. The chamber is at standard atmospheric **pressure**, temperature and humidity. Samples of the atmosphere are taken and are analyzed by gas chromatography to determine the concentration 1-MCP.

DETD . . . length of Release Agent Substrate B and is placed in a 10.0 m.sup.3 chamber. The chamber is at standard atmospheric pressure, temperature and humidity. Samples of the atmosphere are taken and are analyzed by gas chromatography to determine the concentration 1-MCP. . .

DETD . . . length of Release Agent Substrate C and is placed in a 10.0 m.sup.3 chamber. The chamber is at standard atmospheric pressure, temperature and humidity. Samples of the atmosphere are taken and are analyzed by gas chromatography to determine the concentration 1-MCP. . .

DETD . . . bath containing Release Agent Solution E and is placed in a 106 m.sup.3 chamber. The chamber is at standard atmospheric pressure, temperature and humidity. Samples of the atmosphere are taken and are analyzed by gas chromatography to determine the concentration 1-MCP. . .

DETD A standard 48 foot (96 m.sup.3) refrigerated truck trailer is loaded with 48 pallets of apples. A 55 cm length of Cyclopropene Compound Substrate II is roller contacted with a 57 cm length of Release Agent. . .

CLM What is claimed is:

13. A method to deliver a cyclopropene compound to a plant, fruit, flower or vegetable to inhibit an ethylene response in the plant, fruit, flower or vegetable, comprising the steps of coating at least one side of a substrate with a material containing at least one cyclopropene. . . one cyclopropene compound to a release agent wherein a gaseous cyclopropene compound is released, in the presence of the plant, fruit, flower or vegetable.

IT 2781-85-3D, Cyclopropene, derivs. 3100-04-7, 1-MCP  
(delivery systems for cyclopropene derivative plant growth regulators)

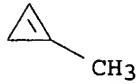
IT 2781-85-3D, Cyclopropene, derivs. 3100-04-7, 1-MCP  
(delivery systems for cyclopropene derivative plant growth regulators)

RN 2781-85-3 USPATFULL

CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 3100-04-7 USPATFULL  
CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



L96 ANSWER 85 OF 87 USPATFULL on STN  
ACCESSION NUMBER: 2003:312597 USPATFULL  
TITLE: Method and device for the generation of cyclopropene compounds  
INVENTOR(S): Kostansek, Edward Charles, Buckingham, PA, UNITED STATES  
Weisel, Leah Anne, Jamison, PA, UNITED STATES  
Watts, Carrie Lynn, Lansdale, PA, UNITED STATES

NUMBER	KIND	DATE
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PATENT INFORMATION: US 2003220201 A1 20031127  
 APPLICATION INFO.: US 2003-430233 A1 20030505 (10)

NUMBER	DATE
PRIORITY INFORMATION: US 2002-380440P	20020514 (60)
DOCUMENT TYPE: Utility	
FILE SEGMENT: APPLICATION	
LEGAL REPRESENTATIVE: ROHM AND HAAS COMPANY, PATENT DEPARTMENT, 100 INDEPENDENCE MALL WEST, PHILADELPHIA, PA, 19106-2399	
NUMBER OF CLAIMS: 10	
EXEMPLARY CLAIM: 1	
NUMBER OF DRAWINGS: 2 Drawing Page(s)	
LINE COUNT: 653	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A device and method for generating cyclopropene gas comprising bubbling a gas through a vessel that contains water. A cyclopropene/cyclodextrin complex is added to the water to form an aqueous suspension. Cyclopropenes are used to inhibit the ethylene response in plants and plant products, such as **fruits and vegetables**. The device of the invention may treat small volume facilities as well as very large volume storage facilities, such as warehouses and the like. The bubbled gas rapidly and completely liberates the cyclopropene gas from its cyclodextrin carrier to provide a cost effective and efficient treatment against the ethylene response in plants.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB . . . to form an aqueous suspension. Cyclopropenes are used to inhibit the ethylene response in plants and plant products, such as **fruits and vegetables**. The device of the invention may treat small volume facilities as well as very large volume storage facilities, such as . . .

SUMM . . . such as trees and shrubs, and includes whole plants and any portions thereof, such as field crops, potted plants, cut **flowers** (stems and **flowers**) and harvested **fruits and vegetables**. Such cyclopropene compounds and their derivatives, such as methylcyclopropene, are capable of inhibiting the ethylene response in plants. The cyclopropene. . .

SUMM [0002] It is well known that ethylene can cause the premature death of plants or plant parts including, for example, **flowers**, leaves, **fruits**, and **vegetables** through binding with certain receptors in the plant. Ethylene also promotes leaf yellowing and stunted growth as well as premature **fruit**, **flower**, and leaf drop. Because of these ethylene-induced problems, very active and intense research presently concerns the investigation of ways to. . .

SUMM . . . and thereby provide a convenient and safe means of storing, transporting and applying or delivering the active compounds to plants, **flowers**, **fruits** or **vegetables**. For the most active cyclopropene derivative disclosed in U.S. Pat. No. 5,518,988, 1-methylcyclopropene, the preferred molecular encapsulation agent is a cyclodextrin, with  $\alpha$ -cyclodextrin being the most preferred. The application or delivery of these active compounds to plants, **flowers**, **fruits** or **vegetables** is accomplished by simply adding water to the molecular encapsulation agent complex. The complex is prepared according to the methods. . .

DETD [0023] The sparge source 30 may be a pressure vessel which encapsulates the sparge gas under pressure. When called upon to be released into the vessel 12, a valve means 32 may be employed to

DETD grams of alpha-cyclodextrin and 50 to 200 ml of water buffered. . . . . chilled to 4° C. and the contents mixed for 24 hours. Once the methylcyclopropene is trapped onto the cyclodextrin, the pressure fell from about 2 atmospheres to a vacuum. Nitrogen gas was then added to atmospheric pressure. The buffer solution was removed by filtering through a filtering bag within the vessel and the cyclodextrin cake was transferred. . . . .

IT 2781-85-3D, Cyclopropene, complexes 10016-20-3D,  
α-Cyclodextrin, complexes with cyclopropene derivs. 12619-70-4D,  
Cyclodextrin, complexes with cyclopropene derivs. 255062-91-0D,  
complexes  
(agents to inhibit ethylene responses in plants and plant products)  
IT 29663-07-8P, Methylcyclopropene  
(preparation and complexation as agent to inhibit ethylene responses in  
plants and plant products)  
IT 2781-85-3D, Cyclopropene, complexes 255062-91-0D,  
complexes  
(agents to inhibit ethylene responses in plants and plant products)  
RN 2781-85-3 USPATFULL  
CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 255062-91-0 USPATFULL  
CN Cyclopropene, dimethyl- (9CI) (CA INDEX NAME)



2 ( D1-Me )

IT 29663-07-8P, Methylcyclopropene  
(preparation and complexation as agent to inhibit ethylene responses in  
plants and plant products)  
RN 29663-07-8 USPATFULL  
CN Cyclopropene, methyl- (9CI) (CA INDEX NAME)



D1-Me

=>

cantalupensis) and musk melons (*C. melo*), pineapples (*Aranae comosus*), persimmon (*Diospyros* sp.) and raspberries (e.g., *Fragaria* or *Rubus ursinus*), blueberries (*Vaccinium* sp.), green beans (*Phaseolus vulgaris*), members of the genus. . .

SUMM Ornamental plants which may be treated by the methods of the present invention to inhibit senescence and/or to prolong flower life and appearance (such as the delay of wilting), include potted **ornamentals** and **cut flowers**. Potted **ornamentals** and **cut flowers** which may be treated with the methods of the present invention include azalea (*Rhododendron* spp.), hydrangea (*Macrophylla hydrangea*), hibiscus (*Hibiscus*).

SUMM Plants which may be treated by the methods of the present invention to inhibit abscission of foliage, **flowers** and **fruit** include cotton (*Gossypium* spp.), **apples**, **pears**, cherries (*Prunus avium*), pecans (*Carva illinoensis*), grapes (*Vitis vinifera*), olives (e.g., *Olea europaea*), coffee (*Cofffea arabica*), snapbeans (*Phaseolus vulgaris*), and weeping fig (*Ficus benjamina*), as well as dormant seedlings such as various **fruit trees** including **apple**, **ornamental plants**, **shrubbery**, and **tree seedlings**.

DETD . . . is attached to the main system. The reaction vessel, which already has been purged with nitrogen and has been partially **evacuated**, is opened to the powder addition vessel to allow the powder to fall into the reaction vessel with the aid. . .

DETD . . . agitated for an additional 1-30 minutes, and preferably for 15 minutes, using the propeller mixer discussed above. A reaction vessel **pressure** of about two atmospheres is used in this example.

DETD . . . product, the nitrogen purge is stopped and water is added ranging from 0.00-1.47 liters by adding the water under positive **pressure** over a period of 1 hour. Once all the water has been added, a ball valve connecting the vessel with the condenser is opened. Any **pressure** is then released by bubbling the gaseous methylcyclopropene product through a mixture of cyclodextrin dissolved in water (as explained later). . .

DETD . . . pH in the range of 3 to 5. The headspace gas in the reaction vessel is transferred by pulling a **vacuum** on the mixing vessel to 15 psi, closing the condenser/reaction vessel ball valve and opening the ball valve linking the. . .

DETD . . . the gas flows to the mixing vessel. Once the initial head space is transferred over to the mixing vessel, a **vacuum** will begin to be created in the reaction vessel which can be detected by reading the mounted **pressure** gauge. When this occurs, the reaction vessel is filled with nitrogen gas (99.95% pure) by closing any connections to the rest of the system, and allowing the nitrogen gas to enter through the nitrogen inlet valve when a slight **vacuum** occurs. Once the reaction vessel has been filled with nitrogen gas, which will be identifiable by reading the mounted **pressure** gauge, the head space gas from the reaction vessel is once again transferred to the mixing vessel. The process is repeated until the mixing vessel is filled with gas as indicated by the **pressure** gauge. A minimum concentration of 80,000 ppm of methylcyclopropene is preferred in the mixing vessel at this step. This concentration. . . (preferably about 4° C.). Next, the contents in the mixing vessel, if containing the buffer solution, are filtered out by **vacuum** filtration, by connecting a **vacuum** pump at the bottom outlet of the mixing vessel, which will remove the buffer solution from the mixture while the. . .

DETD . . . reaction is displaced with a syringe or by sweeping with nitrogen through a condenser and cold trap, connected to a **vacuum** system into a flask containing approximately 50 to 200

senescence, particularly fruit ripening, flower fading and leaf abscission.

SUMM It is well known that ethylene can cause the premature death of plants including flowers, leaves, fruits and vegetables. It can also promote leaf yellowing and stunted growth as well as premature fruit, flower and leaf drop.

SUMM . . . S-adenosylmethione to 1-amino cyclopropane-1-carboxylic acid, the precursor to ethylene. Staby et al. ("Efficacies of Commercial Anti-ethylene Products for Fresh Cut Flowers", Hort Technology, pp. 199-202, 1993) discuss the limitations of these ethylene synthesis inhibitors. Because ethylene synthesis inhibitors only inhibit a . . .

SUMM . . . STS can be used by growers, retailers and wholesalers as a liquid that is absorbed into the stems of the flowers. While STS is highly effective, it has a serious waste disposal problem. It is illegal to dispose of the silver. . . .

SUMM . . . active agent in the complex, the complex (and hence the gaseous active agent) does not exhibit a very high vapor pressure and is therefore protected from oxidation and other chemical degradation reactions. A gaseous active compound such as cyclopropene or derivatives thereof is held in a caged molecule whereby the vapor pressure of the solid is very low due to the weak atomic forces (van de Waals and hydrogen binding). The binding of these gaseous active compounds with. . . .

SUMM . . . about 1:1 to about 4:1. The reaction temperature can range from about 20° to about 60° C. and the reaction pressure can range from about 1 to about 100 psi.

SUMM . . . active compound. Heating the water also facilitates a faster release of the active compound. Because methylcyclopropene has a high vapor pressure at normal working temperatures from 4 to 25° C., it quickly escapes into the atmosphere. By releasing methylcyclopropene from a . . . .

SUMM . . . is used generically in the present invention to also include woody-stemmed plants in addition to field crops, potted plants, cut flowers, harvested fruits and vegetables and ornamentals. Some of the plants that can be treated by the methods of the present invention are listed below.

SUMM . . . initiated by either exogenous or endogenous sources of ethylene. Ethylene responses include, for example, (i) the ripening and/or senescence of flowers, fruits and vegetables, (ii) the abscission of foliage, flowers and fruit, (iii) the prolongation of the life of ornamentals, such as potted plants, cut flowers, shrubbery and dormant seedlings, (iv) the inhibition of growth in some plants such as the pea plant, and (v) the. . . .

SUMM Vegetables which may be treated by the methods of the present invention to inhibit senescence include leafy green vegetables such as lettuce (e.g., *Lactuca sativa*), spinach (*Spinaca oleracea*) and cabbage (*Brassica oleracea*; various roots such as potatoes (*Solanum tuberosum*), . . . .

SUMM Fruits which may be treated by the methods of the present invention to inhibit ripening include tomatoes (*Lycopersicon esculentum*), apples (*Malus domestica*), bananas (*Musa sapientum*), pears (*Pyrus communis*), papaya (*Carica papaya*), mangoes (*Mangifera indica*), peaches (*Prunus persica*), apricots (*Prunus armeniaca*), nectarines (*Prunus persica nectarina*), oranges (*Citrus sp.*), lemons (*Citrus limonia*), limes (*Citrus aurantifolia*), grapefruit (*Citrus paradisi*), tangerines (*Citrus nobilis deliciosa*), kiwi (*Actinidia chinensis*), melons such as cantaloupes (*C.*



D1-Me

L96 ANSWER 87 OF 87 USPATFULL on STN  
 ACCESSION NUMBER: 2000:9838 USPATFULL  
 TITLE: Synthesis methods, complexes and delivery methods for  
 the safe and convenient storage, transport and  
 application of compounds for inhibiting the ethylene  
 response in plants  
 INVENTOR(S): Daly, James, Chicago, IL, United States  
 Kourelis, Bob, Chicago, IL, United States  
 PATENT ASSIGNEE(S): Biotechnologies for Horticulture, Inc., Burr Ridge, IL,  
 United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6017849		20000125
APPLICATION INFO.:	US 1998-137056		19980820 (9)
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	Granted		
PRIMARY EXAMINER:	McKane, Joseph K.		
ASSISTANT EXAMINER:	Osweki, Jane C.		
LEGAL REPRESENTATIVE:	Hill & Simpson		
NUMBER OF CLAIMS:	26		
EXEMPLARY CLAIM:	1		
LINE COUNT:	1226		

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB The present invention generally relates to the regulation of plant physiology, in particular to methods for inhibiting the ethylene response in plants or plant products, and has three embodiments. The first embodiment relates to methods of minimizing impurities capable of reversibly binding to plant ethylene receptor sites during the synthesis of cyclopropene and its derivatives such as methylcyclopropene, thereby avoiding the negative effects these impurities have on plants treated with cyclopropene and its derivatives. The second embodiment relates to complexes formed from molecular encapsulation agents such as cyclodextrin, and cyclopropene and its derivatives such as methylcyclopropene, in addition to cyclopentadiene and diazocyclopentadiene and their derivatives, thereby providing a convenient means for storing and transporting these compounds capable of inhibiting the ethylene response in plants, which are reactive gases and highly unstable because of oxidation and other potential reactions. The third embodiment relates to convenient methods of delivering to plants these compounds capable of inhibiting the ethylene response in the plants in order to extend their shelf life.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . or plant products, in order to prolong their shelf life. The invention relates to prolonging the shelf life of cut flowers and ornamentals, potted plants (edible and non-edible), transplants, and plant foods including fruits, vegetables and root crops.

SUMM . . . aspects of plant growth, development and senescence. The most important effects of ethylene include processes normally associated with

vessel is transferred by pulling a vacuum on the mixing vessel to 15 psi, closing the condenser/reaction vessel ball valve and opening the ball valve linking the.

DETD . . . the gas flows to the mixing vessel. Once the initial head space is transferred over to the mixing vessel, a vacuum will begin to be created in the reaction vessel which can be detected by reading the mounted pressure gauge. When this occurs, the reaction vessel is filled with nitrogen gas (99.95% pure) by closing any connections to the rest of the system, and allowing the nitrogen gas to enter through the nitrogen inlet valve when a slight vacuum occurs. Once the reaction vessel has been filled with nitrogen gas, which will be identifiable by reading the mounted pressure gauge, the head space gas from the reaction vessel is once again transferred to the mixing vessel. The process is repeated until the mixing vessel is filled with gas as indicated by the pressure gauge. A minimum concentration of 80,000 ppm of methylcyclopropene is preferred in the mixing vessel at this step. This concentration. . . (preferably about 4° C.). Next, the contents in the mixing vessel, if containing the buffer solution, are filtered out by vacuum filtration, by connecting a vacuum pump at the bottom outlet of the mixing vessel, which will remove the buffer solution from the mixture while the. . .

DETD . . . reaction is displaced with a syringe or by sweeping with nitrogen through a condenser and cold trap, connected to a vacuum system into a flask containing approximately 50 to 200 grams of alpha-cyclodextrin and 50 to 200 ml of water buffered. . .

DETD . . . chilled to 4° C. and the contents mixed for 24 hours. Once the methylcyclopropene is trapped onto the cyclodextrin, the pressure fell from about 2 atmospheres to a vacuum. Nitrogen gas was then added to atmospheric pressure. The buffer solution was removed by filtering through a filtering bag within the vessel and the cyclodextrin cake was transferred. . .

IT 2781-85-3, Cyclopropene 14309-32-1, 1,2-Dimethylcyclopropene (synthesis methods, complexes and delivery methods for the safe and convenient storage, transport and application of compds. for inhibiting the ethylene response in plants)

IT 29663-07-8P, Methylcyclopropene (synthesis methods, complexes and delivery methods for the safe and convenient storage, transport and application of compds. for inhibiting the ethylene response in plants)

IT 2781-85-3, Cyclopropene (synthesis methods, complexes and delivery methods for the safe and convenient storage, transport and application of compds. for inhibiting the ethylene response in plants)

RN 2781-85-3 USPATFULL

CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT 29663-07-8P, Methylcyclopropene (synthesis methods, complexes and delivery methods for the safe and convenient storage, transport and application of compds. for inhibiting the ethylene response in plants)

RN 29663-07-8 USPATFULL

CN Cyclopropene, methyl- (9CI) (CA INDEX NAME)

**flowers, harvested fruits and vegetables and ornamentals.** Some of the plants that can be treated by the methods of the present invention are listed below.

**SUMM** . . . initiated by either exogenous or endogenous sources of ethylene. Ethylene responses include, for example, (i) the ripening and/or senescence of **flowers, fruits and vegetables**, (ii) the abscission of foliage, **flowers** and **fruit**, (iii) the prolongation of the life of **ornamentals**, such as potted plants, cut **flowers**, **shrubbery** and dormant seedlings, (iv) the inhibition of growth in some plants such as the pea plant, and (v) the. . .

**SUMM** **Vegetables** which may be treated by the methods of the present invention to inhibit senescence include leafy green **vegetables** such as lettuce (e.g., *Lactuca sativa*), spinach (*Spinaca oleracea*) and cabbage (*Brassica oleracea*; various roots such as potatoes (*Solanum tuberosum*), . . .

**SUMM** **Fruits** which may be treated by the methods of the present invention to inhibit ripening include tomatoes (*Lycopersicon esculentum*), **apples** (*Malus domestica*), bananas (*Musa sapientum*), **pears** (*Pyrus communis*), papaya (*Carica papaya*), mangoes (*Mangifera indica*), **peaches** (*Prunus persica*), apricots (*Prunus armeniaca*), nectarines (*Prunus persica nectarina*), oranges (*Citrus sp.*), lemons (*Citrus limonia*), limes (*Citrus aurantifolia*), grapefruit (*Citrus paradisi*), tangerines (*Citrus nobilis deliciosa*), kiwi (*Actinidia chinensis*), **melons** such as cantaloupes (*C. cantalupensis*) and musk **melons** (*C. melo*), pineapples (*Ananas comosus*), **persimmon** (*Diospyros sp.*) and raspberries (e.g., *Fragaria* or *Rubus ursinus*), blueberries (*Vaccinium sp.*), green beans (*Phaseolus vulgaris*), members of the genus. . .

**SUMM** **Ornamental plants** which may be treated by the methods of the present invention to inhibit senescence and/or to prolong **flower** life and appearance (such as the delay of wilting), include potted **ornamentals** and cut **flowers**. Potted **ornamentals** and cut **flowers** which may be treated with the methods of the present invention include azalea (*Rhododendron spp.*), hydrangea (*Macrophylla hydrangea*), hibiscus (*Hibiscus*). . .

**SUMM** Plants which may be treated by the methods of the present invention to inhibit abscission of foliage, **flowers** and **fruit** include cotton (*Gossypium spp.*), **apples**, **pears**, cherries (*Prunus avium*), pecans (*Carica illinoensis*), grapes (*Vitis vinifera*), olives (e.g., *Olea europaea*), coffee (*Coffea arabica*), snapbeans (*Phaseolus vulgaris*), and weeping fig (*Ficus benjamina*), as well as dormant seedlings such as various **fruit trees** including **apple**, **ornamental plants**, **shrubbery**, and **tree seedlings**.

**DETD** . . . is attached to the main system. The reaction vessel, which already has been purged with nitrogen and has been partially **evacuated**, is opened to the powder addition vessel to allow the powder to fall into the reaction vessel with the aid. . .

**DETD** . . . agitated for an additional 1-30 minutes, and preferably for 15 minutes, using the propeller mixer discussed above. A reaction vessel **pressure** of about two atmospheres is used in this example.

**DETD** . . . product, the nitrogen purge is stopped and water is added ranging from 0.00-1.47 liters by adding the water under positive **pressure** over a period of 1 hour. Once all the water has been added, a ball valve connecting the vessel with the condenser is opened. Any **pressure** is then released by bubbling the gaseous methylcyclopropene product through a mixture of cyclodextrin dissolved in water (as explained later). . .

**DETD** . . . pH in the range of 3 to 5. The headspace gas in the reaction

response in plants or plant products, and has three embodiments. The first embodiment relates to methods of minimizing impurities capable of reversibly binding to plant ethylene receptor sites during the synthesis of cyclopropene and its derivatives such as methylcyclopropene, thereby avoiding the negative effects these impurities have on plants treated with cyclopropene and its derivatives. The second embodiment relates to complexes formed from molecular encapsulation agents such as cyclodextrin, and cyclopropene and its derivatives such as methylcyclopropene, in addition to cyclopentadiene and diazocyclopentadiene and their derivatives, thereby providing a convenient means for storing and transporting these compounds capable of inhibiting the ethylene response in plants, which are reactive gases and highly unstable because of oxidation and other potential reactions. The third embodiment relates to convenient methods of delivering to plants these compounds capable of inhibiting the ethylene response in the plants in order to extend their shelf life.

## CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . or plant products, in order to prolong their shelf life. The invention relates to prolonging the shelf life of cut **flowers** and **ornamentals**, potted plants (edible and non-edible), transplants, and plant foods including **fruits**, **vegetables** and root crops.

SUMM . . . aspects of plant growth, development and senescence. The most important effects of ethylene include processes normally associated with senescence, particularly **fruit** ripening, **flower** fading and leaf abscission.

SUMM It is well known that ethylene can cause the premature death of plants including **flowers**, leaves, **fruits** and **vegetables**. It can also promote leaf yellowing and stunted growth as well as premature **fruit**, **flower** and leaf drop.

SUMM . . . S-adenosynamethione to 1-amino cyclopropane-1-carboxylic acid, the precursor to ethylene. Staby et al. ("Efficacies of Commercial Anti-ethylene Products for Fresh Cut **Flowers**", Hort Technology, pp. 199-202, 1993) discuss the limitations of these ethylene synthesis inhibitors. Because ethylene synthesis inhibitors only inhibit a. . .

SUMM . . . STS can be used by growers, retailers and wholesalers as a liquid that is absorbed into the stems of the **flowers**. While STS is highly effective, it has a serious waste disposal problem. It is illegal to dispose of the silver.

SUMM . . . active agent in the complex, the complex (and hence the gaseous active agent) does not exhibit a very high vapor **pressure** and is therefore protected from oxidation and other chemical degradation reactions. A gaseous active compound such as cyclopropene or derivatives thereof is held in a caged molecule whereby the vapor **pressure** of the solid is very low due to the weak atomic forces (van de Waals and hydrogen binding). The binding of these gaseous active compounds with. . .

SUMM . . . about 1:1 to about 4:1. The reaction temperature can range from about 20° to about 60° C. and the reaction **pressure** can range from about 1 to about 100 psi.

SUMM . . . active compound. Heating the water also facilitates a faster release of the active compound. Because methylcyclopropene has a high vapor **pressure** at normal working temperatures from 4 to 25° C., it quickly escapes into the atmosphere. By releasing methylcyclopropene from a. . .

SUMM . . . is used generically in the present invention to also include woody-stemmed plants in addition to field crops, potted plants, cut

meter the. . . the name Sensidyne AP060SEEEF60C1, which is available from Sensidyne, Inc., Clearwater, Fla., USA. The sparge source may also be a **pressure** container in combination with a **pump** means, as may be preferred by the operator. Since the cyclopropene generator 10 is meant to be very portable, the. . . . as to permit the operator to exit the sealed storage chamber. Further, certain plants such as tulip bulbs and stored pears require repeat treatments to maintain freshness. Approximately every 10 days, the generator could be timed to turn on and pump. . .

DETD IT 2781-85-3, Cyclopropene 3100-04-7, 1-MethylCyclopropene (generation of cyclopropene and its derivs. for preservation of stored fruits and vegetables)

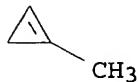
IT 2781-85-3, Cyclopropene 3100-04-7, 1-MethylCyclopropene (generation of cyclopropene and its derivs. for preservation of stored fruits and vegetables)

RN 2781-85-3 USPATFULL

CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 3100-04-7 USPATFULL  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



L96 ANSWER 86 OF 87 USPATFULL on STN  
 ACCESSION NUMBER: 2001:196966 USPATFULL  
 TITLE: Synthesis methods, complexes and delivery methods for the safe and convenient storage, transport and application of compounds for inhibiting the ethylene response in plants  
 INVENTOR(S): Daly, James, Chicago, IL, United States  
 Kourelis, Bob, Chicago, IL, United States  
 PATENT ASSIGNEE(S): AgroFresh, Inc., Philadelphia, PA, United States (U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6313068	B1	20011106
APPLICATION INFO.:	US 1999-367654		19990820 (9)
RELATED APPLN. INFO.:	Continuation-in-part of Ser. No. US 1998-137056, filed on 20 Aug 1998, now patented, Pat. No. US 6017849		
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	GRANTED		
PRIMARY EXAMINER:	Lambkin, Deborah C.		
LEGAL REPRESENTATIVE:	Sonnenchein Nath & Rosenthal		
NUMBER OF CLAIMS:	19		
EXEMPLARY CLAIM:	1		
LINE COUNT:	1202		
CAS INDEXING IS AVAILABLE FOR THIS PATENT.			
AB	The present invention generally relates to the regulation of plant physiology, in particular to methods for inhibiting the ethylene		

L-1 of 1-MCP at 1) atmospheric pressure (\*\*\*1\*\*\* -MCP nor); 2) atmospheric pressure with the induction at sub-atmospheric pressure (25-29 kPa) (1-\*\*\*MCP\*\*\* -subA); 3) sub-atmospheric pressure (29 kPa) with the induction at 25-29 kPa (1 - MCP - subB) were compared to that of untreated, control fruit. After a 2- day ripening period, those in 1 MCP-subB were firmer than those of other treatments; the fruit of 1-MCP-nor and 1 -MCP-subA also remained firmer than did the control. After a 5-day \*\*\*ripening\*\*\* period, the effects were similar among the treatments; the treated fruit were significantly firmer than control fruit. Our data show that 1 - MCP treatment at sub-atmospheric \*\*\*pressure\*\*\* slightly delayed softening of the peach \*\*\*fruit\*\*\*, but the results are deemed to be cost ineffective for practical use, compared to other treated climacteric fruits, such as \*\*\*apple.\*\*\* The ineffectiveness of 1 - MCP in \*\*\*peach\*\*\* fruit cannot be attributed to the lack of its diffusion into the flesh.

CONCEPT CODE: Development and Embryology - General and descriptive 25502

Plant physiology - Growth, differentiation 51510

Agronomy - Miscellaneous and mixed crops 52502

Horticulture - Temperate zone fruits and nuts 53002

Horticulture - Miscellaneous and mixed crops 53012

INDEX TERMS: Major Concepts

Development; Horticulture (Agriculture); Agrichemicals

INDEX TERMS: Chemicals & Biochemicals

1-methylcyclopropene [1-MCP]: agrichemical, growth regulator

INDEX TERMS: Miscellaneous Descriptors

atmospheric pressure; ripening period; softening rate; fruit shelf life; sub-atmospheric pressure

ORGANISM: Classifier

Rosaceae 26675

Super Taxa

Dicotyledones; Angiospermae; Spermatophyta; Plantae

Organism Name

Prunus persica (species) [peach (common)]: temperate fruit crop, cultivar-Akatsuki

Taxa Notes

Angiosperms, Dicots, Plants, Spermatophytes, Vascular Plants

REGISTRY NUMBER: 3100-04-7 (1-methylcyclopropene)

)

3100-04-7 (1-MCP)

L92 ANSWER 17 OF 21 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 1972:18850 BIOSIS

DOCUMENT NUMBER: PREV197208018850; BR08:18850

TITLE: ULTRASTRUCTURE OF MENINGIOMA.

AUTHOR(S): ITO A; YOSHIKI K; TAKEDA T

SOURCE: Hokkaido Journal of Medical Science, (1971) Vol. 46, No. 2, pp. 142-143.

CODEN: HOIZAK. ISSN: 0367-6102.

DOCUMENT TYPE: Article

FILE SEGMENT: BR

LANGUAGE: Unavailable

CONCEPT CODE: Microscopy - General and special techniques 01052

expansin cDNAs, termed PpExp2 and PpExp3, were isolated from ripe peach fruit, and their mRNA expression patterns were characterized during fruit development and in other tissues, including the flower bud, leaf, and stem. All three expansins were detected in the fruit and not in the other tissues, but each showed differential patterns of mRNA accumulation during fruit development. The PpExp2 mRNA was constitutively expressed throughout fruit development but was abundant in Stage III, when the fruit expands exponentially and then matures. The PpExp1 and PpExp3 mRNAs were up-regulated at the onset of ripening, but PpExp1 was induced at an earlier stage. In order to identify the expansins whose expression correlates with the loss of peach fruit firmness, the mRNA expression levels of the three expansins were compared in the ripe fruit of the 'Akatsuki' and 'Manami' cultivars during postharvest storage. During storage, the ripe fruit of 'Akatsuki' rapidly softened as the level of ethylene increased significantly, while 'Manami' fruit remained firm and exhibited very low levels of ethylene production. The PpExp1 and PpExp2 mRNAs were constitutively detectable during the 8-day storage of both cultivars, whereas PpExp3 mRNA was detectable in 'Akatsuki' but hardly detectable in 'Manami', suggesting that PpExp3 expression may be related to the changes in fruit firmness. To address the detailed role of PpExp3 in the loss of fruit firmness, the fruit of 'Manami' was treated by ethylene to artificially induce softening. The PpExp3 mRNA accumulation in the ethylene-treated 'Manami' was detectable and similar to that observed in 'Akatsuki.' These results show that, while several expansins show a general increase in expression levels during the later stages of fruit development, some isoforms show a greater association with softening than others. In this regard, PpExp3 is more likely to play a role in peach fruit softening than PpExp1 or PpExp2.

CC 3-3 (Biochemical Genetics)

Section cross-reference(s) : 6, 11

REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L92 ANSWER 16 OF 21 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 2005:551563 BIOSIS

DOCUMENT NUMBER: PREV200510342500

TITLE: Effect of 1-methylcyclopropene (1-MCP) Treatment under sub-atmospheric pressure on the softening of 'Akatsuki' peach.

AUTHOR(S): Hayama, Hiroko [Reprint Author]; Ito, Akiko; Kashimura, Yoshiki

CORPORATE SOURCE: NARO, Natl Inst Fruit Tree Sci, Dept Plant Cell and Environm, Tsukuba, Ibaraki 3058605, Japan  
hhiroko@affrc.go.jp

SOURCE: Journal of the Japanese Society for Horticultural Science, (SEP 2005) Vol. 74, No. 5, pp. 398-400.  
CODEN: EGKZA9. ISSN: 0013-7626.

DOCUMENT TYPE: Article

LANGUAGE: English

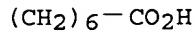
ENTRY DATE: Entered STN: 7 Dec 2005  
Last Updated on STN: 7 Dec 2005

ABSTRACT: The effect of 1-methylcyclopropene (1-MCP) on peach fruit shelf life is very weak, unlike that on other climacteric fruits. In this study, the softening rates of peach fruit after a 12- h exposure to 1  $\mu$  L center dot

IT 28634-53-9P, 1-Cyclopropene-1-heptanoic acid 50915-82-7P  
 , 1-Hexylcyclopropene 50915-83-8P, 1-Octylcyclopropene  
 50915-84-9P 303021-66-1P 341996-24-5P  
 341996-25-6P 341996-29-0P 341996-32-5P  
 341996-34-7P, 1-Cyclopropene-1-octanenitrile 341996-38-1P  
 341996-40-5P 341996-42-7P 341996-49-4P  
 341996-50-7P 341996-55-2P 341996-58-5P  
 341996-59-6P 341996-60-9P 341996-61-0P  
 341996-62-1P 341996-63-2P 341996-64-3P  
 341996-65-4P 341996-66-5P 341996-67-6P  
 341996-68-7P 341996-69-8P 341996-70-1P  
 341996-71-2P 341996-73-4P 341996-74-5P  
 358628-50-9P  
 (preparation of cyclopropene derivs. as agents for blocking ethylene  
 response in plants)

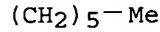
RN 28634-53-9 USPATFULL

CN 1-Cyclopropene-1-heptanoic acid (9CI) (CA INDEX NAME)



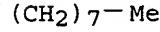
RN 50915-82-7 USPATFULL

CN Cyclopropene, 1-hexyl- (9CI) (CA INDEX NAME)



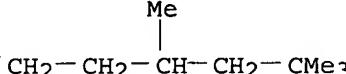
RN 50915-83-8 USPATFULL

CN Cyclopropene, 1-octyl- (9CI) (CA INDEX NAME)



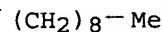
RN 50915-84-9 USPATFULL

CN Cyclopropene, 1-(3,5,5-trimethylhexyl)- (9CI) (CA INDEX NAME)

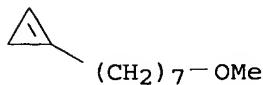


RN 303021-66-1 USPATFULL

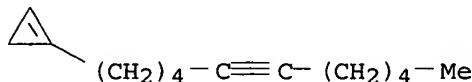
CN Cyclopropene, 1-nonyl- (9CI) (CA INDEX NAME)



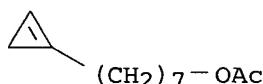
RN 341996-24-5 USPATFULL  
CN Cyclopropene, 1-(7-methoxyheptyl)- (9CI) (CA INDEX NAME)



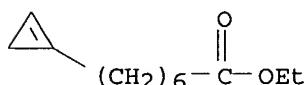
RN 341996-25-6 USPATFULL  
CN Cyclopropene, 1-(5-undecynyl)- (9CI) (CA INDEX NAME)



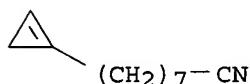
RN 341996-29-0 USPATFULL  
CN 1-Cyclopropene-1-heptanol, acetate (9CI) (CA INDEX NAME)



RN 341996-32-5 USPATFULL  
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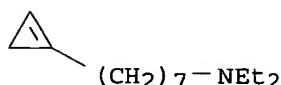
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CN 1-Cyclopropene-1-octanenitrile (9CI) (CA INDEX NAME)



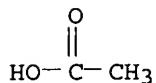
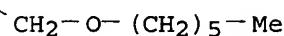
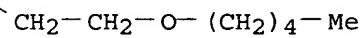
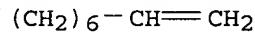
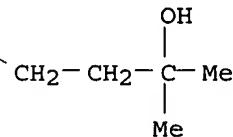
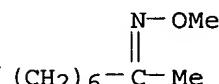
RN 341996-38-1 USPATFULL  
CN 1-Cyclopropene-1-heptanamine, N,N-diethyl-, acetate (9CI) (CA INDEX NAME)

GM 1

CRN 341996-36-9  
CMF C14 H27 N

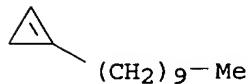


CM 2

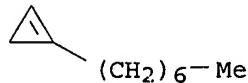
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CN Cyclopropene, 1-[(hexyloxy)methyl]- (9CI) (CA INDEX NAME)RN 341996-42-7 USPATFULL  
CN Cyclopropene, 1-[2-(pentyloxy)ethyl]- (9CI) (CA INDEX NAME)RN 341996-49-4 USPATFULL  
CN Cyclopropene, 1-(7-octenyl)- (9CI) (CA INDEX NAME)RN 341996-50-7 USPATFULL  
CN 1-Cyclopropene-1-propanol,  $\alpha,\alpha$ -dimethyl- (9CI) (CA INDEX NAME)RN 341996-55-2 USPATFULL  
CN 2-Octanone, 8-(1-cyclopropen-1-yl)-, O-methyloxime (9CI) (CA INDEX NAME)

RN 341996-58-5 USPATFULL

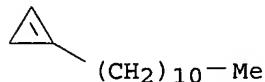
CN Cyclopropene, 1-decyl- (9CI) (CA INDEX NAME)



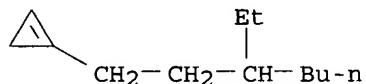
RN 341996-59-6 USPATFULL  
 CN Cyclopropene, 1-heptyl- (9CI) (CA INDEX NAME)



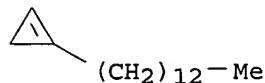
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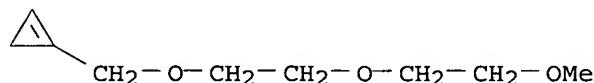
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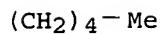
RN 341996-62-1 USPATFULL  
 CN Cyclopropene, 1-tridecyl- (9CI) (CA INDEX NAME)



RN 341996-63-2 USPATFULL  
 CN Cyclopropene, 1-[[2-(2-methoxyethoxy)ethoxy]methyl]- (9CI) (CA INDEX NAME)

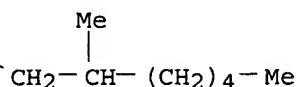


RN 341996-64-3 USPATFULL  
 CN Cyclopropene, 1-pentyl- (9CI) (CA INDEX NAME)



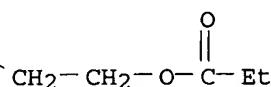
RN 341996-65-4 USPATFULL

CN Cyclopropene, 1-(2-methylheptyl)- (9CI) (CA INDEX NAME)



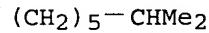
RN 341996-66-5 USPATFULL

CN 1-Cyclopropene-1-ethanol, propanoate (9CI) (CA INDEX NAME)



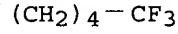
RN 341996-67-6 USPATFULL

CN Cyclopropene, 1-(6-methylheptyl)- (9CI) (CA INDEX NAME)



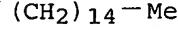
RN 341996-68-7 USPATFULL

CN Cyclopropene, 1-(5,5,5-trifluoropentyl)- (9CI) (CA INDEX NAME)



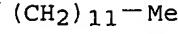
RN 341996-69-8 USPATFULL

CN Cyclopropene, 1-pentadecyl- (9CI) (CA INDEX NAME)



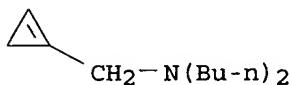
RN 341996-70-1 USPATFULL

CN Cyclopropene, 1-dodecyl- (9CI) (CA INDEX NAME)



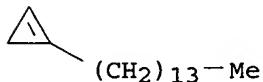
RN 341996-71-2 USPATFULL

CN 1-Cyclopropene-1-methanamine, N,N-dibutyl- (9CI) (CA INDEX NAME)



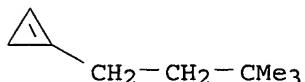
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CN Cyclopropene, 1-tetradecyl- (9CI) (CA INDEX NAME)



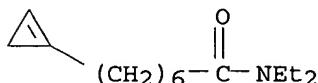
RN 341996-74-5 USPATFULL

CN Cyclopropene, 1-(3,3-dimethylbutyl)- (9CI) (CA INDEX NAME)



RN 358628-50-9 USPATFULL

CN 1-Cyclopropene-1-heptanamide, N,N-diethyl- (9CI) (CA INDEX NAME)

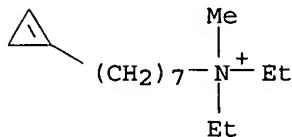


IT 341996-39-2P

(preparation of cyclopropene derivs. as agents for blocking ethylene response in plants)

RN 341996-39-2 USPATFULL

CN 1-Cyclopropene-1-heptanaminium, N,N-diethyl-N-methyl-, iodide (9CI) (CA INDEX NAME)

● I<sup>-</sup>

IT 2781-85-3DP, Cyclopropene, derivs.

(reactant in preparation of cyclopropene derivs. as agents for blocking ethylene response in plants)

RN 2781-85-3 USPATFULL

CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

341996-45-0P 341996-46-1P 341996-51-8P 341996-53-0P  
 (intermediate in preparation of cyclopropene derivs. as agents for blocking ethylene response in plants)

IT 341996-26-7P, 1-Cyclopropene-1-heptanol 341996-36-9P  
 341996-44-9P 341996-54-1P  
 (preparation of cyclopropene derivs. as agents for blocking ethylene response in plants)

IT 3220-60-8P, Methyl sterculate 28634-53-9P, 1-Cyclopropene-1-heptanoic acid 50915-82-7P, 1-Hexylcyclopropene 50915-83-8P, 1-Octylcyclopropene 50915-84-9P  
 54467-84-4P 303021-66-1P 341996-24-5P  
 341996-25-6P 341996-29-0P 341996-32-5P  
 341996-34-7P, 1-Cyclopropene-1-octanenitrile 341996-38-1P  
 341996-40-5P 341996-42-7P 341996-47-2P 341996-48-3P  
 341996-49-4P 341996-50-7P 341996-52-9P  
 341996-55-2P 341996-58-5P 341996-59-6P  
 341996-60-9P 341996-61-0P 341996-62-1P  
 341996-63-2P 341996-64-3P 341996-65-4P  
 341996-66-5P 341996-67-6P 341996-68-7P  
 341996-69-8P 341996-70-1P 341996-71-2P  
 341996-73-4P 341996-74-5P 341996-75-6P 358627-45-9P  
 358628-50-9P  
 (preparation of cyclopropene derivs. as agents for blocking ethylene response in plants)

IT 341996-39-2P  
 (preparation of cyclopropene derivs. as agents for blocking ethylene response in plants)

IT 2781-85-3DP, Cyclopropene, derivs.  
 (reactant in preparation of cyclopropene derivs. as agents for blocking ethylene response in plants)

IT 64-19-7, Acetic acid, reactions 74-88-4, Iodomethane, reactions 75-25-2, Bromoform 75-31-0, Isopropyl amine, reactions 75-36-5, Acetyl chloride 104-15-4, Toluenesulfonic acid, reactions 106-93-4, 1,2-Dibromoethane 109-89-7, Diethylamine, reactions 109-92-2, Ethyl vinyl ether 110-18-9, N,N,N',N'-Tetramethylethylenediamine 124-63-0, Methanesulfonyl chloride 141-52-6, Sodium ethoxide 150-77-6, N,N,N',N'-Tetraethylethylenediamine 151-50-8, Potassium cyanide 513-31-5, 2,3-Dibromopropene 629-03-8, 1,6-Dibromohexane 927-49-1, 6-Undecanone 1643-19-2, Tetra-n-butylammonium bromide 2695-48-9, 8-Bromooc-1-ene 2781-85-3, Cyclopropene 4286-55-9 7087-68-5, Diisopropylethyl amine. 7681-82-5, Sodium iodide, reactions 13249-60-0, 2-Bromo-oct-1-ene 26817-65-2, 1-Chlorodec-4-yne 35804-44-5 50592-87-5 76334-36-6 358627-50-6  
 (reactant in preparation of cyclopropene derivs. as agents for blocking ethylene response in plants)

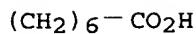
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 (intermediate in preparation of cyclopropene derivs. as agents for blocking ethylene response in plants)

RN 341996-31-4 USPATFULL

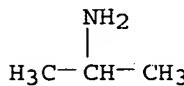
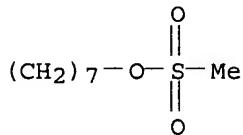
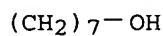
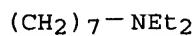
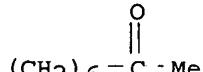
CN 1-Cyclopropene-1-heptanoic acid, compd. with 2-propanamine (1:1) (9CI)  
 (CA INDEX NAME)

CM 1

CRN 28634-53-9  
 CMF C10 H16 O2



CM 2

CRN 75-31-0  
CMF C3 H9 NRN 341996-35-8 USPATFULL  
CN 1-Cyclopropene-1-heptanol, methanesulfonate (9CI) (CA INDEX NAME)IT 341996-26-7P, 1-Cyclopropene-1-heptanol 341996-36-9P  
341996-54-1P  
(preparation of cyclopropene derivs. as agents for blocking ethylene  
response in plants)  
RN 341996-26-7 USPATFULL  
CN 1-Cyclopropene-1-heptanol (9CI) (CA INDEX NAME)RN 341996-36-9 USPATFULL  
CN 1-Cyclopropene-1-heptanamine, N,N-diethyl- (9CI) (CA INDEX NAME)RN 341996-54-1 USPATFULL  
CN 2-Octanone, 8-(1-cyclopropen-1-yl)- (9CI) (CA INDEX NAME)

TITLE: Methods of blocking an ethylene response in plants using cyclopropene derivatives  
 INVENTOR(S): Sisler, Edward C., Raleigh, NC, United States

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2001019995	A1	20010906
	US 6365549	B2	20020402
APPLICATION INFO.:	US 2001-789142	A1	20010220 (9)
RELATED APPLN. INFO.:	Continuation-in-part of Ser. No. US 1999-448523, filed on 23 Nov 1999, GRANTED, Pat. No. US 6194350		

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-193202P	20000330 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	MYERS BIGEL SIBLEY & SAJOVEC, PO BOX 37428, RALEIGH, NC, 27627	
NUMBER OF CLAIMS:	30	
EXEMPLARY CLAIM:	1	
LINE COUNT:	1452	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Methods of applying cyclopropene derivatives and compositions thereof to block ethylene receptors in plants are disclosed. One such method comprises applying to the plant an effective ethylene response-inhibiting amount of cyclopropene derivatives or compositions thereof. Also disclosed are methods of inhibiting abscission in plants, methods of prolonging the life of cut flowers, methods of inhibiting ripening of picked fruits, and methods of inhibiting ripening of picked vegetables.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB . . . derivatives or compositions thereof. Also disclosed are methods of inhibiting abscission in plants, methods of prolonging the life of cut flowers, methods of inhibiting ripening of picked fruits, and methods of inhibiting ripening of picked vegetables.

SUMM [0011] Also disclosed is a method of prolonging the life of a cut flower, comprising applying to the cut flower an effective life-prolonging amount of a cyclopropene derivative or a composition thereof.

SUMM [0012] Also disclosed is a method of inhibiting the ripening of a harvested fruit, comprising applying to the harvested fruit an effective inhibiting amount of a cyclopropene derivative or a composition thereof.

SUMM [0013] Also disclosed is a method of inhibiting the ripening of a harvested vegetable, comprising applying to the harvested vegetable an effective inhibiting amount of a cyclopropene derivative or a composition thereof.

SUMM . . . a cyclopropene derivative or a composition thereof, whether in solid, liquid, or gaseous form, or by introducing the plant, cut flower, picked fruit or picked vegetable into an atmosphere infused with the cyclopropene derivative or a composition thereof. These and other suitable methods of application are.

SUMM . . . treated by the methods described herein include whole plants and any portions thereof, such as field crops, potted plants, cut flowers (stems and flowers), and harvested fruits and vegetables.

SUMM . . . be initiated by either exogenous or endogenous sources of ethylene. Ethylene responses include, for example, the ripening and/or senescence of **flowers, fruits and vegetables**, abscission of foliage, **flowers and fruit**, the shortening of life of **ornamentals** such as potted plants, cut **flowers**, **shrubbery**, seeds, and dormant seedlings, in some plants (e.g., pea) the inhibition of growth, and in other plants (e.g., rice). . . in tillering, changing biochemical compositions of plants (such as increasing leaf area relative to stem area), abortion or inhibition of **flowering** and seed development, lodging effects, stimulation of seed germination and breaking of dormancy, and hormone or epinasty effects.

SUMM [0041] Methods according to embodiments of the present invention inhibit the ripening and/or senescence of **vegetables**. As used herein, "vegetable ripening" includes the ripening of the **vegetable** while still on the **vegetable-bearing plant** and the ripening of the **vegetable** after having been harvested from the **vegetable-bearing plant**. **Vegetables** which may be treated by the method of the present invention to inhibit ripening and/or senescence include leafy green **vegetables** such as lettuce (e.g., *Lactuca sativa*), spinach (*Spinaca oleracea*), and cabbage (*Brassica oleracea*), various roots, such as potatoes (*Solanum tuberosum*). . .

SUMM [0042] Methods according to embodiments of the present invention inhibit the ripening of **fruits**. As used herein, "fruit ripening" includes the ripening of **fruit** while still on the **fruit-bearing plant** as well as the ripening of **fruit** after having been harvested from the **fruit-bearing plant**. **Fruits** which may be treated by the method of the present invention to inhibit ripening include tomatoes (*Lycopersicon esculentum*), **apples** (*Malus domestica*), bananas (*Musa sapientum*), **pears** (*Pyrus communis*), papaya (*Carica papaya*), mangoes (*Mangifera indica*), **peaches** (*Prunus persica*), apricots (*Prunus armeniaca*), nectarines (*Prunus persica nectarina*), oranges (*Citrus sp.*), lemons (*Citrus limonia*), limes (*Citrus aurantifolia*), grapefruit (*Citrus paradisi*), tangerines (*Citrus nobilis deliciosa*), kiwi (*Actinidia chinensis*), **melons** such as cantaloupe (*C. cantalupensis*) and musk **melon** (*C. melo*), pineapple (*Aranas comosus*), **persimmon** (*Diospyros sp.*), various small **fruits** including berries such as strawberries (*Fragaria*), blueberries (*Vaccinium sp.*) and raspberries (e.g., *Rubus ursinus*), green beans (*Phaseolus vulgaris*), members of. . .

SUMM [0043] **Ornamental** plants which may be treated by the method of the present invention to inhibit senescence and/or to prolong **flower** life and appearance (e.g., delay wilting), include potted **ornamentals**, and cut **flowers**. Potted **ornamentals** and cut **flowers** which may be treated with the present invention include azalea (*Rhododendron spp.*), hydrangea (*Macrophylla hydrangea*), hibiscus (*Hibiscus rosasanensis*), snapdragons (*Antirrhinum*). . .

SUMM [0044] Plants which may be treated by the method of the present invention to inhibit abscission of foliage, **flowers** and **fruit** include cotton (*Gossypium spp.*), **apples**, **pears**, cherries (*Prunus avium*), pecans (*Carva illinoensis*), grapes (*Vitis vinifera*), olives (e.g. *Vitis vinifera* and *Olea europaea*), coffee (*Coffea arabica*), snapbeans (*Phaseolus vulgaris*), and weeping fig (*ficus benjamina*), as well as dormant seedlings such as various **fruit trees** including **apple**, **ornamental plants**, **shrubbery**, and **tree seedlings**. In addition, **shrubbery** which may be treated according to the present invention to inhibit abscission. . .

SUMM [0045] Active compounds of the present invention have proven to be unexpectedly potent inhibitors of ethylene action on plants, fruits and vegetables, even when applied at low concentrations. Among other things, compounds of the present invention may result in a longer period.

DETD . . . The results are shown in Table 1.

TABLE 1

Treatment Time and Minimum Concentration of 1-Cyclopropenes of the Present Invention on Banana Fruit		
Active Compound	Treatment Time (hours)	Minimum Concentration (nl/l)
1-hexylcyclopropene	4	12.0
	8	0.8
	24	0.4
	48	0.3
1-octylcyclopropene	4	0.8
	8	0.45
	24	

DETD . . . phases were separated. The organic layer was dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo* to yield 15.0 g (85.7% of theory) of 81% pure 2-bromo-oct-1-ene as an oil.

DETD . . . phases were separated. The organic layer was dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo* to yield 5.25 g (51.0% of theoretical) of 1,1,2-tribromo-2-hexyl-cyclopropane as an oil.

DETD . . . phases were separated. The organic layer was dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo* with a bath temperature under 20° C. to yield 0.300 g (87% of theoretical) of 1-hexyl-cyclopropene pure as an oil.

DETD . . . were added, the organic phase was washed with brine and dried with magnesium sulfate, filtered and stripped. Fractional distillation under *vacuum* gave 93% pure 6-bromohexyl methyl ether. This bromide was converted to the Grignard reagent, which was converted to 1-(7-methoxyheptyl)-cyclopropene in . . .

DETD . . . phase was washed with water and brine, dried over magnesium sulfate, filtered and stripped. The product was fractionally distilled under *reduced pressure* to give 6.1 g of 95% pure 2-bromo-3-hexyloxypropene.

DETD . . . 20% ethyl acetate/80% hexane) to give product that was 70% pure. The more volatile material was removed by distillation under *reduced pressure*; the material left in the pot was 1.63 g of 99% pure 2-bromo-4-pentyloxybutene.

DETD . . . were separated. The combined organic layers were dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo* to yield 18.5 g orange solid. This was slurried in 125 ml diethyl ether and gravity filtered through qualitative fluted filter paper rinsing with an additional 125 ml diethyl ether. The solvent was removed from the filtrate in *vacuo* to yield 12.7 g orange oil. This residue was purified by column chromatography with hexanes to give 6.79 g (47.5% . . .

DETD . . . phases were separated. The organic layer was dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo* to yield 7.00 g (83.4 % of theory) of 2,2-dibromo-1,1-dipentyl-cyclopropane as an oil.

DETD . . . zinc dust were added to the mixture. After 2 further hours, the

solvent was removed from the reaction mixture in *vacuo*. The resulting residue was extracted with hexanes and then diethyl ether from water. The combined organic layers were dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo* to yield 2.1 g (68.2% of theory) of an equal mixture of 2-bromo-1,1-dipentyl-cyclopropane and 1,1-dipentyl-cyclopropane as an oil.

DETD . . . phases were separated. The organic layer was dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo* to yield 1.90 g of 3,3-dipentyl-cyclopropene mixed in equal parts with 1,1-dipentyl-cyclopropane as an oil.

DETD . . . phases were separated. The organic layer was dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo* to yield 0.200 g (39.1% of theory) of 1-pent-2-enyl-2-pentyl-cyclopropene as an oil.

DETD . . . phases were separated. The organic layer was dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo* to yield 0.280 g of 1:1 mixture of 1-pent-2-enyl-3,3-dipentyl-cyclopropene and 1,1-dipentyl-cyclopropane as an oil.

DETD . . . transferred to a separatory funnel and the phases were separated. The solvent was removed from the isolated organic layer in *vacuo*. This residue was extracted with hexanes from water. The resulting mixture was transferred to a separatory funnel and the phases were separated. The organic layer was dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo*. This residue was purified by column chromatography with 10% diethyl ether/hexanes to yield 14.6 g (66.3% of theory) of 3-(1,2,2-tribromo-cyclopropyl)-propionic.

DETD . . . phases were separated. The organic layer was dried over MgSO<sub>4</sub> and filtered. The solvent was removed from the filtrate in *vacuo* with a bath temperature under 20° C. to yield 0.380 g of 75% pure with remainder being diethyl ether (79%).

CLM What is claimed is:

8. The method according to claim 1, wherein said ethylene response is fruit ripening.

9. The method according to claim 1, wherein said ethylene response is vegetable ripening.

10. The method according to claim 1, wherein said ethylene response is flower senescence.

12. The method according to claim 1, wherein said plant is a harvested fruit.

13. The method according to claim 1, wherein said plant is a harvested vegetable.

17. A method of prolonging the life of a cut flower, comprising applying to the cut flower an effective life-prolonging amount of a compound of Formula I: ##STR16## wherein: n is a number from 1 to 4; . . .

29. A method of prolonging the life of a cut flower, comprising applying to the cut flower an effective life-prolonging amount of a compound of Formula I: ##STR18## wherein: n is a number from 1 to 4; . . .

IT 13112-77-1P 17799-46-1P 38380-55-1P, 8-Iodoct-1-ene 39492-20-1P  
55491-60-6P 79406-49-8P 79629-40-6P 141493-79-0P 341996-23-4P  
341996-27-8P 341996-28-9P 341996-30-3P 341996-31-4P  
341996-35-8P 341996-37-0P 341996-41-6P 341996-43-8P



D1—Me

L96 ANSWER 75 OF 87 USPATFULL on STN DUPLICATE 8  
ACCESSION NUMBER: 2002:112851 USPATFULL  
TITLE: DELIVERY SYSTEM FOR CYCLOPROPENES  
INVENTOR(S): Kostansek, Edward Charles, Buckingham, PA, UNITED  
STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2002058592	A1	20020516
	US 6444619	B2	20020903
APPLICATION INFO.:	US 2001-950967	A1	20010912 (9)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2000-236087P	20000928 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	ROHM AND HAAS COMPANY, PATENT DEPARTMENT, 100 INDEPENDENCE MALL WEST, PHILADELPHIA, PA, 19106-2399	
NUMBER OF CLAIMS:	10	
EXEMPLARY CLAIM:	1	
LINE COUNT:	282	
CAS INDEXING IS AVAILABLE FOR THIS PATENT.		

AB The present invention relates to complexes formed from molecular encapsulation agents such as cyclodextrin, and cyclopropene and its derivatives such as methylcyclopropene, which are capable of inhibiting the ethylene response in plants, wherein the complex is **pressure** agglomerated.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB . . . and its derivatives such as methylcyclopropene, which are capable of inhibiting the ethylene response in plants, wherein the complex is **pressure** agglomerated.

SUMM [0002] It is well known that ethylene can cause the premature death of plants including flowers, leaves, fruits and vegetables through binding with certain receptors in the plant. It can also promote leaf yellowing and stunted growth as well as premature fruit, flower and leaf drop. Because of these ethylene-induced problems, very active and intense research presently concerns the investigation of ways to. . .

SUMM . . . of water, water is not used in the present process to make the improved delivery system. We have found that **pressure** agglomeration of the 1-methylcyclopropene/ $\alpha$ -cyclodextrin complex can be used to form tablets, wafers, pellets, briquettes, and similar forms, with or without. . . .

SUMM [0010] wherein the composition is pressure agglomerated.

SUMM [0017] A wide variety of pressure agglomeration equipment is available and may be used to agglomerate the composition. These include, for example, presses, granulators, and extruders. Preferred agglomeration equipment are those which are considered high

pressure agglomerators such as, for example, pellet presses, tablet presses, and roller presses. Low to medium pressure equipment such as pan granulators or extruders can also be used. However, because they typically require the use of liquids, . . .

SUMM [0018] Using such pressure agglomeration equipment, the tablets, wafers, pellets, briquettes, and similar forms of agglomerated cyclopropene/encapsulation agent complexes may range from less 0.1. . .

DETD . . . Chrompack CP-PoraPlot Q-HT  
Dimensions: 10 m + 0.32 mm i.d.  
Film Thickness: 10 microns

Carrier Gas: Helium

Flow Rate: 2.5 ml/min

Column Head Pressure: 6 psi

Injection Port Temperature: 150 deg. C.

Initial Temperature: 35 deg. C.

Initial Time: 0.5 min.

Program Rate 1: 20 deg. C./min.

Final Temperature: . . .

CLM What is claimed is:

. . . molecular encapsulation agent within which the cyclopropene is encapsulated; and c) optionally one or more adjuvants; wherein the composition is pressure agglomerated.

7. The composition of claim 1, wherein the composition is pressure agglomerated using a tablet press.

8. A method for preparing a composition of an encapsulated cyclopropene comprising pressure agglomerating a composition comprising:

a) a cyclopropene of the formula: ##STR3## wherein R is hydrogen or a substituted or unsubstituted. . .

IT 2781-85-3D, Cyclopropene, derivs. 3100-04-7,

1-Methylcyclopropene  
(pressure agglomerated delivery system for cyclopropenes containing cyclodextrin)

IT 2781-85-3D, Cyclopropene, derivs. 3100-04-7,

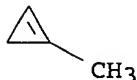
1-Methylcyclopropene  
(pressure agglomerated delivery system for cyclopropenes containing cyclodextrin)

RN 2781-85-3 USPATFULL

CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 3100-04-7 USPATFULL  
CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



L96 ANSWER 76 OF 87 USPATFULL on STN  
ACCESSION NUMBER: 2001:150546 USPATFULL

DUPLICATE 10

L96 ANSWER 74 OF 87 USPATFULL on STN DUPLICATE 6  
ACCESSION NUMBER: 2003:146703 USPATFULL  
TITLE: Delivery system for cyclopropenes  
INVENTOR(S): Kostansek, Edward Charles, Buckingham, PA, UNITED STATES  
Jacobson, Richard Martin, Chalfont, PA, UNITED STATES  
Weisel, Leah Anne, Jamison, PA, UNITED STATES  
Stevens, Bridget Marie, Horsham, PA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2003100450	A1	20030529
	US 6762153	B2	20040713
APPLICATION INFO.:	US 2002-262397	A1	20021001 (10)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2001-330320P	20011018 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	ROHM AND HAAS COMPANY, PATENT DEPARTMENT, 100 INDEPENDENCE MALL WEST, PHILADELPHIA, PA, 19106-2399	
NUMBER OF CLAIMS:	10	
EXEMPLARY CLAIM:	1	
LINE COUNT:	466	
CAS INDEXING IS AVAILABLE FOR THIS PATENT.		

AB The present invention relates to co-

AB The present invention relates to complexes formed from molecular encapsulation agents such as cyclodextrin, and cyclopropene and its derivatives such as methylcyclopropene, which are capable of inhibiting the ethylene response in plants. More specifically this invention relates to compositions of cyclopropenes and molecular encapsulation agents containing additives to improve the release of the cyclopropene when the composition is contacted with water.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM [0002] It is well known that ethylene can cause the premature death of plants including flowers, leaves, fruits and vegetables through binding with certain receptors in the plant.

It can also promote leaf yellowing and stunted growth as well as premature fruit, flower and leaf drop. Because of these ethylene-induced problems, very active and intense research presently concerns the investigation of ways to.

SUMM . . . and incomplete, sometimes taking days. This is especially true for the large quantity of powdered complex needed to treat full-scale fruit storage rooms. Stirring the powder/water mixture does not appreciably speed up 1-methylcyclopropene release when large quantities of the complex are.

SUMM . . . of a free-flowing powder or agglomerated into tablets, wafers, pellets, briquettes, or similar materials. When agglomerated, the composition is preferably pressure agglomerated. A wide variety of pressure agglomeration equipment is available and may be used to agglomerate the composition. These include, for example, presses, granulators, and extruders. Preferred agglomeration equipment are those which are considered high pressure agglomerators such as, for example, pellet presses, tablet presses, and roller presses. Low to medium pressure equipment such as pan granulators or extruders can also be used. However, because they typically require the use of water, . . .

SUMM [0020] Using such pressure agglomeration equipment, the tablets, wafers, pellets, briquettes, and similar forms of agglomerated cyclopropene/encapsulation agent complexes may range from less 0.1.

SUMM . . . carbonate or bicarbonate can be in the form of a slow release or a delayed release form made by high pressure agglomeration, a large particle size, or coating the particles with solution delaying substances such as polymer films (see, for example, . . .

DETD . . . Chrompack CP-PoraPlot Q-HT  
Dimensions: 10 m + 0.32 mm i.d.  
Film Thickness: 10 microns

Carrier Gas: Helium  
Flow Rate: 2.5 ml/minute  
Column Head Pressure: 6 psi  
Injection Port Temperature: 150 deg. C.  
Initial Temperature: 35 deg. C.  
Initial Time: 0.5 minutes  
Program Rate 1: 20 deg. C./minute

Final Temperature: . . .  
IT 2781-85-3D, Cyclopropene, derivs. 29663-07-8,  
Methylcyclopropene  
(compns. inhibiting ethylene response in plants, containing)  
IT 2781-85-3D, Cyclopropene, derivs. 29663-07-8,  
Methylcyclopropene  
(compns. inhibiting ethylene response in plants, containing)

RN 2781-85-3 USPATFULL  
CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 29663-07-8 USPATFULL  
CN Cyclopropene, methyl- (9CI) (CA INDEX NAME)

INDEX TERMS: preservation method  
 Miscellaneous Descriptors  
 apple: fruit; refrigeration  
 requirement; Meeting Abstract  
 REGISTRY NUMBER: 3100-04-7 (1-METHYLCYCLOPROPENE  
 )

L96 ANSWER 73 OF 87 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on  
 STN  
 ACCESSION NUMBER: 2000:347728 BIOSIS  
 DOCUMENT NUMBER: PREV200000347728  
 TITLE: Effect of abscisic acid on banana fruit  
 ripening in relation to the role of ethylene.  
 AUTHOR(S): Jiang, Yueming [Reprint author]; Joyce, Daryl C.; Macnish, Andrew J.  
 CORPORATE SOURCE: South China Institute of Botany, Chinese Academy of Sciences, Guangzhou, 510650, China  
 SOURCE: Journal of Plant Growth Regulation, (March, 2000) Vol. 19, No. 1, pp. 106-111. print.  
 CODEN: JPPGRDI. ISSN: 0721-7595.  
 DOCUMENT TYPE: Article  
 LANGUAGE: English  
 ENTRY DATE: Entered STN: 16 Aug 2000  
 Last Updated on STN: 7 Jan 2002  
 ABSTRACT: The role of abscisic acid (ABA) in banana fruit ripening was examined with the ethylene binding inhibitor, 1-methylcyclopropene (1-MCP). ABA (0, 10<sup>-5</sup>, 10<sup>-4</sup>, or 10<sup>-3</sup> mol/L) was applied by vacuum infiltration into fruit. 1-MCP (1 μmol/L) was applied by injecting a measured volume of stock gas into sealed glass jars containing fruit. Fruit ripening, as judged by ethylene evolution and respiration associated with color change and softening, was accelerated by 10<sup>-4</sup> or 10<sup>-3</sup> mol/L ABA. ABA at 10<sup>-5</sup> mol/L had no effect. The acceleration of ripening by ABA was greater at 10<sup>-3</sup> mol/L than at 10<sup>-4</sup> mol/L. ABA-induced acceleration of banana fruit ripening was not observed in 1-MCP-treated fruit, especially when ABA was applied after exposure to 1-MCP. Thus, ABA's promotion of ripening in intact banana fruit is at least partially mediated by ethylene. Exposure of ABA-treated fruit to 0.1 μmol/L ethylene for 24 h resulted in increased ethylene production and respiration, and associated skin color change and fruit softening. Control fruit (no ABA) was unresponsive to similar ethylene treatments. The data suggest that ABA facilitates initiation and progress in the sequence of ethylene-mediated ripening events, possibly by enhancing the sensitivity to ethylene.  
 CONCEPT CODE: Biochemistry studies - General 10060  
 Physiology - General 12002  
 Reproductive system - Physiology and biochemistry 16504  
 Plant physiology - Respiration, fermentation 51508  
 Plant physiology - Reproduction 51512  
 Plant physiology - Growth substances 51514  
 Plant physiology - Chemical constituents 51522  
 Plant physiology - General and miscellaneous 51526  
 INDEX TERMS: Major Concepts  
 Chemical Coordination and Homeostasis; Reproductive System (Reproduction)  
 INDEX TERMS: Parts, Structures, & Systems of Organisms  
 fruit: reproductive system, ripening  
 INDEX TERMS: Chemicals & Biochemicals  
 1-methylcyclopropene [1-

for broccoli did not typically perform well. We evaluated microperforated packages in conjunction with 1-MCP for broccoli storage at 5 degreeC. The data collectively suggests that inhibition of ethylene action and reduction in respiration combine to extend the storability of broccoli florets.

CONCEPT CODE: General biology - Symposia, transactions and proceedings 00520  
 Biochemistry studies - General 10060  
 Food technology - General and methods 13502  
 Food technology - Fruits, nuts and vegetables 13504

INDEX TERMS: Major Concepts  
 Foods

INDEX TERMS: Chemicals & Biochemicals  
 1-methylcyclopropene; carbon dioxide: food atmosphere chemistry; oxygen: food atmosphere chemistry

INDEX TERMS: Methods & Equipment  
 MAP [modified atmosphere packaging]: food storage method, microperforations

INDEX TERMS: Miscellaneous Descriptors  
 broccoli: vegetable; Meeting Abstract

REGISTRY NUMBER: 3100-04-7 (1-methylcyclopropene)  
 )  
 124-38-9 (carbon dioxide)  
 7782-44-7 (oxygen)

L96 ANSWER 72 OF 87 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on STN

ACCESSION NUMBER: 2000:431645 BIOSIS

DOCUMENT NUMBER: PREV200000431645

TITLE: Use of 1-MCP to reduce the requirement for refrigeration and modified atmospheres in the storage of apple fruit.

AUTHOR(S): Beaudry, R. M. [Reprint author]; Mir, N. A. [Reprint author]

CORPORATE SOURCE: Dept. of Horticulture, Michigan State Univ., East Lansing, MI, 48824, USA

SOURCE: Hortscience, (June, 2000) Vol. 35, No. 3, pp. 469. print. Meeting Info.: 97th Annual International Conference of the American Society for Horticultural Science. Lake Buena Vista, Florida, USA. July 23-26, 2000. American Society for Horticultural Science.

CODEN: HJHSAR. ISSN: 0018-5345.

DOCUMENT TYPE: Conference; (Meeting)  
 Conference; Abstract; (Meeting Abstract)

LANGUAGE: English

ENTRY DATE: Entered STN: 11 Oct 2000

Last Updated on STN: 10 Jan 2002

CONCEPT CODE: Food technology - Fruits, nuts and vegetables 13504  
 General biology - Symposia, transactions and proceedings 00520

Food technology - General and methods 13502

INDEX TERMS: Major Concepts

Foods

INDEX TERMS: Chemicals & Biochemicals

1-MCP [1-methylcyclopropene]

INDEX TERMS: Methods & Equipment

modified atmosphere storage:

INDEX TERMS: Plant physiology - Photosynthesis 51506  
 Plant physiology - Respiration, fermentation 51508  
 Horticulture - Flowers and ornamentals 53010  
 Horticulture - Miscellaneous and mixed crops 53012  
 Major Concepts  
     Bioenergetics (Biochemistry and Molecular Biophysics);  
     Horticulture (Agriculture)  
 INDEX TERMS: Parts, Structures, & Systems of Organisms  
     bulb  
 INDEX TERMS: Chemicals & Biochemicals  
     carbon dioxide; ethylene; oxygen: consumption rate;  
     polysaccharides  
 INDEX TERMS: Miscellaneous Descriptors  
     Michaelis-Menten kinetics; gummosis; respiration; weight  
     loss  
 ORGANISM: Classifier  
     Liliaceae 25345  
 Super Taxa  
     Monocotyledones; Angiospermae; Spermatophyta; Plantae  
 Organism Name  
     Tulipa gesneriana [tulip]: cultivar-Apeldoorn,  
     cultivar-Leen van der Mark, ornamental crop  
 Taxa Notes  
     Angiosperms, Monocots, Plants, Spermatophytes, Vascular  
     Plants  
 REGISTRY NUMBER: 124-38-9 (carbon dioxide)  
     74-85-1 (ethylene)  
     7782-44-7 (oxygen)

L96 ANSWER 71 OF 87 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on  
 STN  
 ACCESSION NUMBER: 2001:411206 BIOSIS  
 DOCUMENT NUMBER: PREV200100411206  
 TITLE: Justification for the use of microperforations in MAP of  
 broccoli.  
 AUTHOR(S): Mir, Nazir [Reprint author]; Romig, William [Reprint  
 author]; Mehla, Chattra; Beaudry, Randolph  
 CORPORATE SOURCE: EPL Technologies, Inc., Philadelphia, PA, 19113, USA  
 SOURCE: Hortscience, (June, 2001) Vol. 36, No. 3, pp. 526. print.  
 Meeting Info.: 98th Annual International Conference of the  
 American Society for Horticultural Science. Sacramento,  
 California, USA. July 21-25, 2001. American Society for  
 Horticultural Science.  
 CODEN: HJHSAR. ISSN: 0018-5345.  
 DOCUMENT TYPE: Conference; (Meeting)  
     Conference; Abstract; (Meeting Abstract)  
 LANGUAGE: English  
 ENTRY DATE: Entered STN: 29 Aug 2001  
     Last Updated on STN: 22 Feb 2002  
 ABSTRACT: Atmosphere modification by hermetically sealed  
 packages can be predicted or described using relatively simple mathematical  
 equations that incorporate film permeability, the respiratory response to  
 oxygen and the temperature-dependence of both these processes. Broccoli  
 florets sealed in low-density polyethylene packages were incubated at 0, 5, 10,  
 15, and 20 degreeC until O<sub>2</sub> and CO<sub>2</sub> levels in the package reached a steady  
 state. Uptake of O<sub>2</sub> was modeled using a Michaelis-Menten-type equation. In  
 general, the broccoli florets responded favorably to low O<sub>2</sub>, elevated CO<sub>2</sub> and  
 low temperature. However, owing to the high rate of product respiration, the  
 high risk of fermentation, inadequate film permeability to O<sub>2</sub> at elevated  
 temperature, and the high permeability of CO<sub>2</sub> relative to O<sub>2</sub>, hermetic packages

ORGANISM: Angiosperms, Monocots, Plants, Spermatophytes, Vascular Plants  
 Classifier Thysanoptera 75350  
 Super Taxa Insecta; Arthropoda; Invertebrata; Animalia  
 Organism Name Thrips hawaiiensis (species): pest  
 Taxa Notes Animals, Arthropods, Insects, Invertebrates  
 REGISTRY NUMBER: 3100-04-7 (1-methylcyclopropene)  
 )  
 74-83-9 (methyl bromide)  
 7803-51-2Q (phosphine)  
 12768-82-0Q (phosphine)

L96 ANSWER 70 OF 87 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on  
 STN  
 ACCESSION NUMBER: 2002:249801 BIOSIS  
 DOCUMENT NUMBER: PREV200200249801  
 TITLE: Carbon dioxide and ethylene interactions in tulip bulbs.  
 AUTHOR(S): de Wild, Hans P. J. [Reprint author]; Gude, Henk;  
 Peppelenbos, Herman W.  
 CORPORATE SOURCE: Agrotechnological Research Institute (ATO), Bornsesteeg 59,  
 6700 AA, Wageningen, Netherlands  
 j.p.j.dewild@ato.wag-ur.nl  
 SOURCE: Physiologia Plantarum, (February, 2002) Vol. 114, No. 2,  
 pp. 320-326. print.  
 CODEN: PHPLAI. ISSN: 0031-9317.

DOCUMENT TYPE: Article  
 LANGUAGE: English  
 ENTRY DATE: Entered STN: 17 Apr 2002  
 Last Updated on STN: 17 Apr 2002  
 ABSTRACT: The effect of CO<sub>2</sub> on ethylene-induced gummosis (secretion of polysaccharides), weight loss and respiration in tulip bulbs (*Tulipa gesneriana* L.) was investigated. A pretreatment with 1-MCP prevented these ethylene-induced effects, indicating that ethylene action must have been directed via the ethylene receptor. Treatment with 0.3 Pa ethylene for 2 days caused gummosis on 50% of the total number of bulbs of cultivar Apeldoorn, known to be sensitive for gummosis. Addition of CO<sub>2</sub> (10 kPa) reduced the ethylene-induced gummosis to 18%. In a second experiment the influence of ethylene and CO<sub>2</sub> on respiration and FW loss of bulbs of the cultivar Leen van der Mark was studied. A range of ethylene partial pressures (0.003-0.3 Pa) was applied continuously for 29 days. Ethylene caused a transient peak in O<sub>2</sub> consumption rate during the first days after the start of application. The relation between O<sub>2</sub> consumption rate and ethylene partial \*\*\*pressure\*\*\* could be described by Michaelis-Menten kinetics. Respiratory peaks were reduced by CO<sub>2</sub>. This inhibition by CO<sub>2</sub> could not totally be due to competition with ethylene at the receptor binding-site, as was indicated by the use of an O<sub>2</sub> consumption model. Pre-treatment of bulbs with 1-\*\*\*MCP\*\*\* and subsequent exposure to CO<sub>2</sub> showed that CO<sub>2</sub> could influence respiration irrespective of any interaction with ethylene. Ethylene and CO<sub>2</sub> both stimulated weight loss. The effect of combined treatments of ethylene and CO<sub>2</sub> on weight loss was at least as strong as the sum of the separate effects, which implies that competition between ethylene and CO<sub>2</sub> at the receptor binding-site was unlikely.

CONCEPT CODE: Biochemistry studies - General 10060  
 Biochemistry studies - Carbohydrates 10068  
 Biophysics - Bioenergetics: electron transport and oxidative phosphorylation 10510

L96 ANSWER 67 OF 87 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on  
STN DUPLICATE 12

ACCESSION NUMBER: 1999:372984 BIOSIS  
DOCUMENT NUMBER: PREV199900372984  
TITLE: Carbon dioxide and 1-MCP inhibit ethylene production and respiration of pear fruit by different mechanisms.  
AUTHOR(S): de Wild, Hans P.J.; Woltering, Ernst J.; Peppelenbos, Herman W. [Reprint author]  
CORPORATE SOURCE: Agrotechnological Research Institute (ATO-DLO), 6700 AA, Wageningen, Netherlands  
SOURCE: Journal of Experimental Botany, (June, 1999) Vol. 50, No. 335, pp. 837-844. print.  
CODEN: JEBOA6. ISSN: 0022-0957.  
DOCUMENT TYPE: Article  
LANGUAGE: English  
ENTRY DATE: Entered STN: 9 Sep 1999  
Last Updated on STN: 9 Sep 1999

ABSTRACT: Ethylene production in relation to O<sub>2</sub> partial pressure of whole pear fruit stored at 2°C could be described by a Michaelis-Menten equation. This was indicated by the use of a gas exchange model. The maximum ethylene production rate was strongly inhibited while the (EQUATION) value (1.25 kPa) was not affected by elevated CO<sub>2</sub>. Ethylene production was also inhibited by 1-MCP, an inhibitor of ethylene perception. The reduction in ethylene production by CO<sub>2</sub> was similar for 1-MCP treated and untreated pears. Elevated CO<sub>2</sub>, therefore, must have had an influence on ethylene production other than through ethylene perception. A possible site of inhibition by CO<sub>2</sub> is the conversion of ACC to ethylene. The O<sub>2</sub> uptake rate in relation to O<sub>2</sub> partial \*\*\*pressure\*\*\* of whole pear fruit could be described by a Michaelis-Menten equation. The O<sub>2</sub> uptake rate was inhibited by elevated CO<sub>2</sub> at a level similar to the inhibition of ethylene production. Again the (EQUATION) value (0.68 kPa) was not affected by CO<sub>2</sub>. Using 1-\*\*\*MCP\*\*\* treatments it was shown that there was no direct effect of inhibited ethylene production on O<sub>2</sub> uptake rate.

CONCEPT CODE: Plant physiology - Metabolism 51519

Biochemistry - Gases 10012  
 Plant physiology - Photosynthesis 51506  
 Plant physiology - Respiration, fermentation 51508  
 Plant physiology - Reproduction 51512  
 General biology - Miscellaneous 00532

INDEX TERMS: Major Concepts  
 Bioenergetics (Biochemistry and Molecular Biophysics);  
 Metabolism

INDEX TERMS: Parts, Structures, & Systems of Organisms  
 fruit: reproductive system

INDEX TERMS: Chemicals & Biochemicals  
 carbon dioxide; ethylene: plant growth regulator,  
 production; 1-MCP

INDEX TERMS: Miscellaneous Descriptors  
 gas exchange models; respiration inhibition

ORGANISM: Classifier  
 Rosaceae 26675  
 Super Taxa  
 Dicotyledones; Angiospermae; Spermatophyta; Plantae  
 Organism Name  
 Pyrus communis [pear]  
 Taxa Notes  
 Angiosperms, Dicots, Plants, Spermatophytes, Vascular  
 Plants

REGISTRY NUMBER: 124-38-9 (carbon dioxide)  
 74-85-1 (ethylene)

L96 ANSWER 68 OF 87 BIOSIS COPYRIGHT (c) 2006 The Thomson Corporation on  
 STN

ACCESSION NUMBER: 2004:252703 BIOSIS

DOCUMENT NUMBER: PREV200400250742

TITLE: Quality changes during refrigerated storage of araza  
 fruit treated with 1-MCP.

AUTHOR(S): Hernandez, Maria [Reprint Author]; Gallego, Lina [Reprint  
 Author]; Barrera, Jaime [Reprint Author]; Martinez,  
 Orlando; Fernandez-Trujillo, Juan Pablo

CORPORATE SOURCE: Instituto Amazonico de Investigaciones Cientificas SINCHI,  
 Bogota 02, Colombia

SOURCE: Hortscience, (August 2003) Vol. 38, No. 5, pp. 851-852.  
 print.  
 Meeting Info.: American Association for Horticultural  
 Science Centennial Conference. Providence, RI, USA. October  
 03-06, 2003. American Association for Horticultural  
 Science.  
 ISSN: 0018-5345 (ISSN print).

DOCUMENT TYPE: Conference; (Meeting)  
 Conference; Abstract; (Meeting Abstract)

LANGUAGE: English

ENTRY DATE: Entered STN: 12 May 2004  
 Last Updated on STN: 12 May 2004

ABSTRACT: Araza fruit harvested at two maturity stages (green mature  
 and mature) in Caqueta (Colombia) were treated according with manufacturer's  
 instructions with 0 (control in air) or 1000 ppb 1-MCP,  
 either for 1 or 6 hours at 20degreeC. The fruit were stored at  
 10degreeC and 90% RH to determine the effect of 1-MCP  
 treatment on quality parameters (weight loss, respiration rate, firmness, skin  
 colour, juiciness, anthracnose, shrivelling and skin scald). Fruit  
 were inspected after 1 or 2 weeks at 10degreeC with or without a shelf life  
 period (3 days at 20degreeC and 70% RH). 1-MCP delayed  
 respiration rate and colour changes in green mature fruit treated for

\*Kidney Diseases: PA, pathology  
 Kidney Glomerulus: ME, metabolism  
 Macrophages: PA, pathology  
 Mice  
 Mice, Inbred C57BL  
 Mitogen-Activated Protein Kinases: ME, metabolism  
 Monocyte Chemoattractant Protein-1: ME, metabolism  
 Natriuretic Agents: ME, metabolism  
 \*Natriuretic Peptide, Brain: PD, pharmacology  
 Phosphorylation  
 Rats  
 Rats, Inbred WKY  
 Research Support, Non-U.S. Gov't  
 Serum Albumin: AN, analysis  
 Transforming Growth Factor beta: ME, metabolism  
 CAS REGISTRY NO.: 114471-18-0 (Natriuretic Peptide, Brain); 86-54-4  
 (Hydralazine)  
 CHEMICAL NAME: 0 (Antihypertensive Agents); 0 (Complement C3); 0  
 (Immunoglobulin G); 0 (Monocyte Chemoattractant Protein-1);  
 0 (Natriuretic Agents); 0 (Serum Albumin); 0 (Transforming  
 Growth Factor beta); 0 (transforming growth factor beta1);  
 EC 2.7.1.37 (Mitogen-Activated Protein Kinases)

L96 ANSWER 63 OF 87 MEDLINE on STN  
 ACCESSION NUMBER: 2002142850 MEDLINE  
 DOCUMENT NUMBER: PubMed ID: 11877989  
 TITLE: Time-dependent master equation simulation of complex  
 elementary reactions in combustion: application to the  
 reaction of 1CH<sub>2</sub> with C<sub>2</sub>H<sub>2</sub> from 300-2000 K.  
 AUTHOR: Frankcombe T J; Smith S C  
 CORPORATE SOURCE: Department of Chemistry, University of Queensland,  
 Brisbane, Qld, 4072, Australia.  
 SOURCE: Faraday discussions, (2001) No. 119, pp. 159-71; discussion  
 255-74.  
 Journal code: 9212301. ISSN: 1359-6640.  
 PUB. COUNTRY: England: United Kingdom  
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)  
 LANGUAGE: English  
 FILE SEGMENT: NONMEDLINE; PUBMED-NOT-MEDLINE  
 ENTRY MONTH: 200208  
 ENTRY DATE: Entered STN: 7 Mar 2002  
 Last Updated on STN: 21 Aug 2002  
 Entered Medline: 20 Aug 2002

ABSTRACT:  
 Computational simulations of the title reaction are presented, covering a  
 temperature range from 300 to 2000 K. At lower temperatures we find that  
 initial formation of the cyclopropene complex by addition of  
 methylene to acetylene is irreversible, as is the stabilisation process via  
 collisional energy transfer. Product branching between propargyl and the  
 stable isomers is predicted at 300 K as a function of pressure for  
 the first time. At intermediate temperatures (1200 K), complex temporal  
 evolution involving multiple steady states begins to emerge. At high  
 temperatures (2000 K) the timescale for subsequent unimolecular decay  
 of thermalized intermediates begins to impinge on the timescale for reaction of  
 methylene, such that the rate of formation of propargyl product does not admit  
 a simple analysis in terms of a single time-independent rate constant until the  
 methylene supply becomes depleted. Likewise, at the elevated temperatures the  
 thermalized intermediates cannot be regarded as irreversible product channels.  
 Our solution algorithm involves spectral propagation of a symmetrized version  
 of the discretized master equation matrix, and is implemented in a high

precision environment which makes hitherto unachievable low-temperature modelling a reality.

L96 ANSWER 64 OF 87 MEDLINE on STN  
 ACCESSION NUMBER: 1998433538 MEDLINE  
 DOCUMENT NUMBER: PubMed ID: 9760814  
 TITLE: [The role of monocyte chemotactic peptide (MCP-1) in chronic renal allograft rejection].  
 Rola chemotaktycznego peptydu dla monocytow (MCP-1) w przewleklym odrzucaniu przeszczepionej nerkii.  
 AUTHOR: Boratynska M  
 CORPORATE SOURCE: Katedra i Klinika Nefrologii Akademii Medycznej we Wroclawiu.  
 SOURCE: Polskie archiwum medycyny wewn trznej, (1998 Apr) Vol. 99, No. 4, pp. 272-80.  
 Journal code: 0401225. ISSN: 0032-3772.  
 PUB. COUNTRY: Poland  
 DOCUMENT TYPE: (CLINICAL TRIAL)  
 (CONTROLLED CLINICAL TRIAL)  
 Journal; Article; (JOURNAL ARTICLE)  
 LANGUAGE: Polish  
 FILE SEGMENT: Priority Journals  
 ENTRY MONTH: 199812  
 ENTRY DATE: Entered STN: 15 Jan 1999  
 Last Updated on STN: 15 Jan 1999  
 Entered Medline: 10 Dec 1998

**ABSTRACT:**  
 Monocyte chemotactic peptide-1 (MCP-1) plays a key role as a mediator of inflammatory infiltration, mainly composed with macrophages. Experimental studies showed that macrophages and their products are pathogenetic factors of chronic renal graft rejection (ch.g.r.). The objective of the present study was to determine the role of MCP-1 in the pathogenesis of human renal ch.g.r. Examined were 34 patients with ch.g.r. (Group I), 50 patients with a stable allograft function (Group II), and 25 healthy subjects (control). Serum and urine levels of MCP-1 were measured by ELISA. The serum level of MCP-1 was found to be higher in transplant patients, than in control group, but this difference was not significant. The serum level of MCP-1 showed a correlation with concentration of triglycerides in both transplant patient groups. This may results from overproduction of MCP-1 through cells of vascular wall affected by hyperlipidemic microenvironment. Considering the lack of relationship between the serum and urine levels of MCP-1, I decided attribute the urine levels of MCP-1 to the secretion through the infiltrating cells and through the kidney cells. In patients with ch.g.r. the urine levels of MCP-1 were significantly higher  $p < 0.001$  than in patients with a stable graft function and control group. MCP-1 levels were particularly high ( $> 2000$  pg/mg creatinine) in patients with enhanced dynamics of ch.g.r. The MCP-1 levels were higher in those patients whose biopsies described cellular infiltration ( $1385 + 820$  pg/mg creatinine vs  $680 + 280$  pg/mg creatinine). The urine level of MCP-1 showed a correlation with concentration of serum creatinine, cholesterol, level of proteinuria and with arterial \*\*\*pressure\*\*\* in ch.g.r. patients. Increased urine levels of MCP-1 and correlation of MCP-1 with the activity of progressive deterioration of the graft function suggest important role of this chemokine in the pathogenesis of ch.g.r., possibly by activating macrophages and by stimulating their influx into the vascular wall, glomeruli and interstitial tissue. Relationship of urinary MCP-1 excretion with arterial hypertension and lipid disorder suggest that the effect of those risk factors for a progressive \*\*\*deterioration\*\*\* of graft function manifest on the molecular level by affecting the generation of MCP-1.

CONTROLLED TERM: Check Tags: Female; Male

DOCUMENT NUMBER: PubMed ID: 11729234  
TITLE: Overexpression of brain natriuretic peptide in mice ameliorates immune-mediated renal injury.  
AUTHOR: Suganami T; Mukoyama M; Sugawara A; Mori K; Nagae T; Kasahara M; Yahata K; Makino H; Fujinaga Y; Ogawa Y; Tanaka I; Nakao K  
CORPORATE SOURCE: Department of Medicine and Clinical Science, Kyoto University Graduate School of Medicine, Kyoto, Japan.  
SOURCE: Journal of the American Society of Nephrology : JASN, (2001 Dec) Vol. 12, No. 12, pp. 2652-63.  
Journal code: 9013836. ISSN: 1046-6673.  
PUB. COUNTRY: United States  
DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)  
LANGUAGE: English  
FILE SEGMENT: Priority Journals  
ENTRY MONTH: 200202  
ENTRY DATE: Entered STN: 3 Dec 2001  
Last Updated on STN: 13 Feb 2002  
Entered Medline: 12 Feb 2002

## ABSTRACT:

One of major causes of end-stage renal disease is glomerulonephritis, the treatment of which remains difficult clinically. It has already been shown that transgenic mice that overexpress brain natriuretic peptide (BNP), with a potent vasorelaxing and natriuretic property, have ameliorated glomerular injury after subtotal nephrectomy. However, the role of natriuretic peptides in immune-mediated renal injury still remains unknown. Therefore, the effects of chronic excess of BNP on anti-glomerular basement membrane nephritis induced in BNP-transgenic mice (BNP-Tg) were investigated and the mechanisms how natriuretic peptides act on mesangial cells in vitro were explored. After induction of nephritis, severe albuminuria (approximately 21-fold above baseline), tissue damage, including mesangial expansion and cell proliferation, and functional deterioration developed in nontransgenic littermates. In contrast, BNP-Tg exhibited much milder albuminuria (approximately fourfold above baseline), observed only at the initial phase, and with markedly ameliorated histologic and functional changes. Up-regulation of transforming growth factor-beta (TGF-beta) and monocyte chemoattractant protein-1 (MCP-1), as well as increased phosphorylation of extracellular signal-regulated kinase (ERK), were also significantly inhibited in the kidney of BNP-Tg. In cultured mesangial cells, natriuretic peptides counteracted the effects of angiotensin II with regard to ERK phosphorylation and fibrotic action. Because angiotensin II has been shown to play a pivotal role in the progression of nephritis through induction of TGF-beta and MCP-1 that may be ERK-dependent, the protective effects of BNP are likely to be exerted, at least partly, by antagonizing the renin-angiotensin system locally. The present study opens a possibility of a novel therapeutic potential of natriuretic peptides for treating immune-mediated renal injury.

CONTROLLED TERM: Check Tags: Male  
Albuminuria: UR, urine  
Animals  
Antihypertensive Agents: PD, pharmacology  
Blood Pressure: DE, drug effects  
Complement C3: ME, metabolism  
Glomerular Mesangium: CY, cytology  
Glomerular Mesangium: ME, metabolism  
Hydralazine: PD, pharmacology  
Immunoglobulin G: ME, metabolism  
Kidney: ME, metabolism  
Kidney: PA, pathology  
\*Kidney Diseases: IM, immunology  
Kidney Diseases: ME, metabolism

DOCUMENT NUMBER: PubMed ID: 12730272  
 TITLE: Carbon dioxide action on ethylene biosynthesis of preclimacteric and climacteric pear fruit  
 AUTHOR: de Wild Hans P J; Otma Els C; Peppelenbos Herman W  
 CORPORATE SOURCE: Agrotechnological Research Institute (ATO), PO Box 17, 6700 AA Wageningen, The Netherlands.. J.P.deWild@ato.wag-ur.nl  
 SOURCE: Journal of experimental botany, (2003 Jun) Vol. 54, No. 387, pp. 1537-44. Electronic Publication: 2003-04-11. Journal code: 9882906. ISSN: 0022-0957.  
 PUB. COUNTRY: England: United Kingdom  
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)  
 LANGUAGE: English  
 FILE SEGMENT: Priority Journals  
 ENTRY MONTH: 200309  
 ENTRY DATE: Entered STN: 22 May 2003  
 Last Updated on STN: 10 Sep 2003  
 Entered Medline: 9 Sep 2003

**ABSTRACT:**  
 Ethylene production in **pear fruit** was studied at 2 degrees C. Several observations showed that the inhibiting effect of CO<sub>2</sub> on ethylene production did not operate only via the binding site of the ethylene binding protein. Ethylene production of freshly harvested **pears** was stimulated by **1-methylcyclopropene (1-MCP)**, but unaffected or inhibited by CO<sub>2</sub> which points to different action sites for both molecules. In climacteric **pears**, where ethylene production was strongly inhibited by 1-MCP, a range of applied CO<sub>2</sub> partial pressures was able to inhibit ethylene production further, to an extent similar to untreated **pears**. In the case of **pears** that had been stored for a period of 25 weeks, CO<sub>2</sub> only had a clear effect after 1-MCP pretreatment. Respiration measurements showed that the effect of CO<sub>2</sub> on ethylene production did not operate via an effect on respiration. Ethylene production models based on measurements of whole \*\*\*pears\*\*\* were used to study CO<sub>2</sub> effects. Kinetic parameters derived from the models point to the conversion from ACC to ethylene by ACC oxidase as a possible action site for CO<sub>2</sub> inhibition.

**CONTROLLED TERM:** Amino Acid Oxidoreductases: ME, metabolism  
 Amino Acids, Cyclic: ME, metabolism  
 \*Carbon Dioxide: PD, pharmacology  
 Cell Respiration: DE, drug effects  
 Cell Respiration: PH, physiology  
 Cyclopropanes: PD, pharmacology  
 \*Ethylenes: BI, biosynthesis  
 Fruit: DE, drug effects  
 \*Fruit: ME, metabolism  
 Models, Biological  
 \*Oxygen: ME, metabolism  
 Pyrus: DE, drug effects  
 \*Pyrus: ME, metabolism  
 Research Support, Non-U.S. Gov't  
 CAS REGISTRY NO.: 124-38-9 (Carbon Dioxide); 22059-21-8 (1-aminocyclopropane-1-carboxylic acid); 3100-04-7 (1-methylcyclopropene); 74-85-1 (ethylene); 7782-44-7 (Oxygen)  
 CHEMICAL NAME: 0 (Amino Acids, Cyclic); 0 (Cyclopropanes); 0 (Ethylenes); EC 1.4. (Amino Acid Oxidoreductases); EC 1.4.3.- (1-aminocyclopropane-1-carboxylic acid oxidase)

L96 ANSWER 62 OF 87 MEDLINE on STN  
 ACCESSION NUMBER: 2001682127 MEDLINE

CORPORATE SOURCE: Esposito K; Coppola L; Giugliano D  
 Department of Geriatrics and Metabolic Diseases, Second  
 University of Naples, Naples, Italy.. toncop@tiscali.it  
 SOURCE: Journal of internal medicine, (2004 Nov) Vol. 256, No. 5,  
 pp. 398-405.  
 Journal code: 8904841. ISSN: 0954-6820.  
 PUB. COUNTRY: England: United Kingdom  
 DOCUMENT TYPE: (CLINICAL TRIAL)  
 Journal; Article; (JOURNAL ARTICLE)  
 (RANDOMIZED CONTROLLED TRIAL)  
 LANGUAGE: English  
 FILE SEGMENT: Priority Journals  
 ENTRY MONTH: 200411  
 ENTRY DATE: Entered STN: 11 Nov 2004  
 Last Updated on STN: 19 Dec 2004  
 Entered Medline: 30 Nov 2004

## ABSTRACT:

OBJECTIVE: To evaluate the effect of acute hyperhomocysteinaemia with and without antioxidant vitamins pretreatment on coronary circulation and circulating chemokine levels. DESIGN: Observer-blinded, randomized crossover study. SETTING: This study was conducted at a university hospital and at a general hospital in Italy. SUBJECTS: Sixteen healthy hospital staff volunteers (nine men, seven women), aged 26-40 years. INTERVENTIONS: Subjects were given each three loads in random order at 1-week intervals: oral methionine, 100 mg kg(-1) in fruit juice; the same methionine load immediately following ingestion of antioxidant vitamin E, 800 IU, and ascorbic acid, 1000 mg; and methionine-free fruit juice (placebo). MAIN OUTCOME MEASURES: Coronary flow velocity reserve (CFVR), assessed by noninvasive transthoracic Doppler echocardiography, blood pressure, heart rate, lipid and glucose, monocyte chemoattractant protein-1 (MCP-1) and interleukin-8 (IL-8) parameters evaluated at baseline and 4 h following ingestion of the loads. RESULTS: The oral methionine load increased plasma homocysteine from 12.8 +/- 1.8 to 33.3 +/- 3.4 micromol L(-1) at 4 h (P < 0.001). A similar increase was observed with same load plus vitamins (P < 0.001) but not with placebo (P = 0.14). Circulating MCP-1 and IL-8 levels rose after the methionine load (P < 0.001), but not after placebo or methionine plus vitamins. The methionine load significantly reduced CFVR (decrease, 26 +/- 8.2%; P < 0.001). The methionine load with ingestion of vitamins partially prevented the impairment of CFVR (decrease, 11 +/- 4%; P < 0.001). CONCLUSION: Our data suggest that acute hyperhomocysteinaemia reduces CFVR and increases plasma MCP-1 and IL-8 levels in healthy subjects. Pretreatment with antioxidant vitamin E and ascorbic acid prevents the effects of hyperhomocysteinaemia, suggesting an oxidative mechanism.

CONTROLLED TERM: Check Tags: Female; Male  
 Adult  
 \*Antioxidants: TU, therapeutic use  
 \*Coronary Circulation: PH, physiology  
 \*Coronary Disease: ET, etiology  
 Coronary Disease: PC, prevention & control  
 Cross-Over Studies  
 Cytokines: ME, metabolism  
 Humans  
 \*Hyperhomocysteinemia: PP, physiopathology  
 Methionine: TU, therapeutic use  
 \*Vitamins: TU, therapeutic use

CAS REGISTRY NO.: 63-68-3 (Methionine)  
 CHEMICAL NAME: 0 (Antioxidants); 0 (Cytokines); 0 (Vitamins)

L96 ANSWER 61 OF 87 MEDLINE on STN DUPLICATE 7  
 ACCESSION NUMBER: 2003236028 MEDLINE

macrophages into the myocardium in a model of cardiac hypertrophy and morbidity/mortality. METHODS: Stroke-prone spontaneously hypertensive rats fed a high-salt, high-fat diet (SFD) developed heart failure characterized by left ventricular (LV) hypertrophy/pathology and hypocontractility. These rats received either normal diet, SFD, or SFD with the daily administration of 30 mg/kg eprosartan for 28 weeks. LV function and wall thickness was assessed by echocardiography, MCP-1 expression was measured by TaqMan real-time polymerase chain reaction, enzyme-linked immunosorbent assay and immunohistochemistry, and macrophage infiltration into the LV was determined by microscopy. RESULTS: Eprosartan reduced the rate of morbidity/mortality ( $P = 0.001$ ), LV MCP-1 mRNA ( $P < 0.05$ ) and protein expression ( $P < 0.01$ ), and LV macrophage infiltration ( $P < 0.01$ ), while preserving ventricular function ( $P < 0.05$ ). Eprosartan also produced a moderate (16%;  $P < 0.05$ ) decrease in blood \*\*\*pressure.\*\*\* CONCLUSIONS: These data demonstrate that AII1R antagonism in an animal model of hypertensive heart disease reduces MCP-1 expression in the myocardium that results in reduced macrophage recruitment. These effects parallel the preservation of LV systolic function and the reduction in cardiac remodeling/disease progression and reduced morbidity/mortality. Suppression of MCP-1 expression might explain in part the beneficial effects of AII1R antagonism in this model.

CONTROLLED TERM:     \*Acrylates: AD, administration & dosage  
                          Angiotensin II: AI, antagonists & inhibitors  
                          Animals  
                          \*Antihypertensive Agents: AD, administration & dosage  
                          Down-Regulation: DE, drug effects  
                          \*Hypertension: DT, drug therapy  
                          Hypertension: IM, immunology  
                          Hypertension: MO, mortality  
                          \*Hypertrophy, Left Ventricular: DT, drug therapy  
                          Hypertrophy, Left Ventricular: MO, mortality  
                          Hypertrophy, Left Ventricular: US, ultrasonography  
                          \*Imidazoles: AD, administration & dosage  
                          Immunohistochemistry  
                          Macrophages: CY, cytology  
                          Macrophages: IM, immunology  
                          Macrophages: ME, metabolism  
                          \*Monocyte Chemoattractant Protein-1: GE, genetics  
                          Monocyte Chemoattractant Protein-1: ME, metabolism  
                          Myocardial Contraction: DE, drug effects  
                          Myocardium: IM, immunology  
                          Myocardium: ME, metabolism  
                          RNA, Messenger: AN, analysis  
                          Rats  
                          Rats, Inbred SHR  
                          Research Support, Non-U.S. Gov't  
                          \*Thiophenes  
                          Vasculitis: DT, drug therapy  
                          Vasculitis: MO, mortality  
                          Vasculitis: US, ultrasonography

CAS REGISTRY NO.: 11128-99-7 (Angiotensin II); 133040-01-4 (eprosartan)  
 CHEMICAL NAME: 0 (Acrylates); 0 (Antihypertensive Agents); 0 (Imidazoles);  
                   0 (Monocyte Chemoattractant Protein-1); 0 (RNA, Messenger);  
                   0 (Thiophenes)

L96 ANSWER 60 OF 87     MEDLINE on STN                           DUPLICATE 5  
 ACCESSION NUMBER: 2004562896     MEDLINE  
 DOCUMENT NUMBER: PubMed ID: 15485475  
 TITLE:                    Impairment of coronary circulation by acute  
                           hyperhomocysteinaemia and reversal by antioxidant vitamins.  
 AUTHOR:                   Coppola A; Astarita C; Liguori E; Fontana D; Oliviero M;

Brown Fat: CY, cytology  
 Brown Fat: DE, drug effects  
 Brown Fat: ME, metabolism  
 \*Carrier Proteins: AI, antagonists & inhibitors  
 Dose-Response Relationship, Drug  
 Energy Metabolism: DE, drug effects  
 Gene Expression: DE, drug effects  
 Glucose: ME, metabolism  
 \*Inflammation: PA, pathology  
 \*Insect Hormones: BI, biosynthesis  
 \*Insulin Resistance: PH, physiology  
 Leptin: BI, biosynthesis  
 \*Membrane Proteins: AI, antagonists & inhibitors  
 Mice  
 Monocyte Chemoattractant Protein-1: BI, biosynthesis  
 \*Oligopeptides: BI, biosynthesis  
 \*Pyrrolidonecarboxylic Acid: AA, analogs & derivatives  
 RNA, Messenger: BI, biosynthesis  
 Research Support, Non-U.S. Gov't  
 Thermogenesis: DE, drug effects  
 CAS REGISTRY NO.: 50-99-7 (Glucose); 52-39-1 (Aldosterone); 98-79-3  
 (Pyrrolidonecarboxylic Acid)  
 CHEMICAL NAME: 0 (Carrier Proteins); 0 (Insect Hormones); 0 (Leptin); 0  
 (Membrane Proteins); 0 (Monocyte Chemoattractant  
 Protein-1); 0 (Oligopeptides); 0 (RNA, Messenger); 0  
 (adipokinetic hormone); 0 (mitochondrial uncoupling  
 protein)

L96 ANSWER 59 OF 87 MEDLINE on STN DUPLICATE 4  
 ACCESSION NUMBER: 2004181805 MEDLINE  
 DOCUMENT NUMBER: PubMed ID: 15076165  
 TITLE: Eprosartan improves cardiac performance, reduces cardiac  
 hypertrophy and mortality and downregulates myocardial  
 monocyte chemoattractant protein-1 and inflammation in  
 hypertensive heart disease.  
 AUTHOR: Behr Thomas M; Willette Robert N; Coatney Robert W; Berova  
 Marinela; Angermann Christiane E; Anderson Karen;  
 Sackner-Bernstein Jonathan D; Barone Frank C  
 CORPORATE SOURCE: Medizinische Poliklinik, Department of Cardiology,  
 University of Wuerzburg, Germany.. t.behr@medizin.uni-  
 wuerzburg.de  
 SOURCE: Journal of hypertension, (2004 Mar) Vol. 22, No. 3, pp.  
 583-92.  
 COMMENT: Journal code: 8306882. ISSN: 0263-6352.  
 Comment in: J Hypertens. 2004 Mar;22(3):451-4. PubMed ID:  
 15076146  
 PUB. COUNTRY: England: United Kingdom  
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)  
 LANGUAGE: English  
 FILE SEGMENT: Priority Journals  
 ENTRY MONTH: 200410  
 ENTRY DATE: Entered STN: 14 Apr 2004  
 Last Updated on STN: 19 Oct 2004  
 Entered Medline: 18 Oct 2004

ABSTRACT:  
 OBJECTIVE: The purpose of this investigation was to determine whether  
 angiotensin II receptor (AT1R) antagonism interferes with cardiac monocyte  
 chemoattractant protein-1 (MCP-1) expression in  
 hypertrophic cardiomyopathy and failure. DESIGN: We studied the effects of the  
 AT1R antagonist eprosartan on MCP-1 expression, and on the recruitment of

\*\*\*pressure\*\*\* , myocyte/LV hypertrophy, or systolic function. Accordingly, a substantial role of inflammation is indicated in myocardial fibrosis and diastolic dysfunction in hypertensive hearts. Currently, the precise mechanisms whereby acute pressure elevation triggers inflammation remain unknown, but it is likely that activation of the tissue angiotensin system is involved in the induction of the inflammatory process.

CONTROLLED TERM: Animals

\*Coronary Circulation: PH, physiology

\*Diastole: PH, physiology

Fibrosis

Humans

Myocardium: PA, pathology

Research Support, Non-U.S. Gov't

Vasculitis: IM, immunology

Vasculitis: PA, pathology

\*Vasculitis: PP, physiopathology

Ventricular Dysfunction, Left: IM, immunology

Ventricular Dysfunction, Left: PA, pathology

\*Ventricular Dysfunction, Left: PP, physiopathology

L96 ANSWER 58 OF 87

MEDLINE on STN

DUPLICATE 3

ACCESSION NUMBER: 2005376442

MEDLINE

DOCUMENT NUMBER: PubMed ID: 16034720

TITLE: Aldosterone inhibits uncoupling protein-1, induces insulin resistance, and stimulates proinflammatory adipokines in adipocytes.

AUTHOR: Kraus D; Jager J; Meier B; Fasshauer M; Klein J

CORPORATE SOURCE: Department of Internal Medicine I, University of Lubeck, 23538 Lubeck, Germany.

SOURCE: Hormone and metabolic research. Hormon- und Stoffwechselforschung. Hormones et metabolisme, (2005 Jul) Vol. 37, No. 7, pp. 455-9.

Journal code: 0177722. ISSN: 0018-5043.

PUB. COUNTRY: Germany: Germany, Federal Republic of

DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)

LANGUAGE: English

FILE SEGMENT: Priority Journals

ENTRY MONTH: 200509

ENTRY DATE: Entered STN: 22 Jul 2005

Last Updated on STN: 28 Sep 2005

Entered Medline: 27 Sep 2005

ABSTRACT:

Aldosterone is a mineralocorticoid hormone that regulates blood

\*\*\*pressure\*\*\* and salt/water balance. Increased aldosterone levels are found in states of disturbed energy balance such as the metabolic syndrome.

Adipose tissue has been recognized to play a pivotal role in the regulation of energy homeostasis. We investigated direct aldosterone effects on

\*\*\*brown\*\*\* adipocyte function. Aldosterone dose-dependently inhibited expression of uncoupling protein-1 (UCP-1) by 30% ( $p < 0.01$ ). Furthermore, aldosterone dose-dependently impaired insulin-induced glucose uptake by about 25% ( $p < 0.01$ ). On a transcriptional level, mRNA of the proinflammatory

adipokines leptin and monocyte chemoattractant protein-1 (MCP-1) was increased by 5,000% and 40%, respectively, by aldosterone exposure ( $p < 0.05$ ). This study demonstrates that aldosterone directly impacts on major adipose functions including stimulation of proinflammatory adipokines.

CONTROLLED TERM: Adipocytes: DE, drug effects

\*Adipocytes: ME, metabolism

\*Aldosterone: PD, pharmacology

Animals

Blotting, Western

REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 56 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 1999:127730 HCPLUS  
 DOCUMENT NUMBER: 131:18212  
 TITLE: Effects of ethylene and 1-methylcyclopropene on the postharvest qualities of 'Shamouti' oranges  
 AUTHOR(S): Porat, Ron; Weiss, Batia; Cohen, Lea; Daus, Avinoam; Goren, Raphael; Drob, Samir  
 CORPORATE SOURCE: Department of Postharvest Science of Fresh Produce, The Volcani Center, ARO, Bet Dagan, 50250, Israel  
 SOURCE: Postharvest Biology and Technology (1999), 15(2), 155-163  
 CODEN: PBTEED; ISSN: 0925-5214  
 PUBLISHER: Elsevier Science Ireland Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

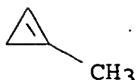
AB Citrus fruits are non-climacteric and produce only low amts. of ethylene. However, exogenous applied, and possibly endogenous ethylene, may be involved in the regulation of fruit maturation and senescence. The effects of ethylene and 1-methylcyclopropene (1-MCP), an ethylene action inhibitor, on the postharvest qualities of 'Shamouti' (*Citrus sinensis* L. Osbeck) oranges was investigated. Neither ethylene nor 1-MCP had any effects on the loss of fruit weight and firmness. However, ethylene had disadvantageous effects on most other postharvest parameters. It increased the appearance of chilling injury (CI) symptoms, stem-end rot decay, and the content of volatile off-flavors in the juice head space and fruit internal atmospheric. The only protective effect of ethylene during postharvest storage was in reducing the amount of decay caused by mold rots. 1-MCP treatment effectively inhibited the ethylene effects on 'Shamouti' oranges, as indicated by blocking of the de-greening process, but was ineffective in restoring the neg. effects of ethylene during storage; it even weakened the tissue and increased CI symptoms, decay development, and the accumulation of volatile off-flavors. Thus, while high concns. of exogenous applied ethylene are undesirable during storage, and enhance fruit deterioration, the small amts. of endogenous ethylene produced by the fruits may be required to maintain their natural resistance against various environmental and pathol. stresses. In future, 1-MCP may be applied as a postharvest treatment to inhibit the de-greening process in citrus fruits which are preferably marketed green, but special care must be taken to avoid CI and decay development.

CC 17-10 (Food and Feed Chemistry)  
 IT Decay (biological)  
 Orange juice  
 Quality control  
 (effects of ethylene and 1-methylcyclopropene on postharvest qualities of 'Shamouti' oranges)  
 IT Growth and development, plant  
 (fruit ripening; effects of ethylene and 1-methylcyclopropene on postharvest qualities of 'Shamouti' oranges)  
 IT 74-85-1, Ethene, biological studies 3100-04-7,  
 1-Methylcyclopropene  
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)  
 (effects of ethylene and 1-methylcyclopropene on postharvest qualities of 'Shamouti' oranges)  
 IT 3100-04-7, 1-Methylcyclopropene

RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BIOL (Biological study)  
 (effects of ethylene and 1-methylcyclopropene on postharvest qualities of 'Shamouti' oranges)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 57 OF 87 MEDLINE on STN DUPLICATE 2  
 ACCESSION NUMBER: 2005555488 MEDLINE  
 DOCUMENT NUMBER: PubMed ID: 16231753  
 TITLE: Diastolic dysfunction in hypertensive hearts: roles of perivascular inflammation and reactive myocardial fibrosis.  
 AUTHOR: Kai Hisashi; Kuwahara Fumitaka; Tokuda Keisuke; Imaizumi Tsutomu  
 CORPORATE SOURCE: Third Department of Internal Medicine and Cardiovascular Research Institute, Kurume University School of Medicine, Kurume, Japan.. naikai@med.kurume-u.ac.jp  
 SOURCE: Hypertension research : official journal of the Japanese Society of Hypertension, (2005 Jun) Vol. 28, No. 6, pp. 483-90. Ref: 53  
 Journal code: 9307690. ISSN: 0916-9636.  
 PUB. COUNTRY: Japan  
 DOCUMENT TYPE: Journal; Article; (JOURNAL ARTICLE)  
 General Review; (REVIEW)  
 LANGUAGE: English  
 FILE SEGMENT: Priority Journals  
 ENTRY MONTH: 200511  
 ENTRY DATE: Entered STN: 20 Oct 2005  
 Last Updated on STN: 11 Nov 2005  
 Entered Medline: 10 Nov 2005

ABSTRACT:

There is increasing evidence that myocardial fibrosis plays a role in the pathogenesis of diastolic dysfunction in hypertensive heart disease. However, it has been difficult to explore the mechanisms of isolated diastolic dysfunction in hypertensive hearts because of the lack of adequate animal models. Recently, we demonstrated that Wistar rats with a suprarenal aortic constriction (AC) can be used as a model of cardiac hypertrophy associated with \*\*\*preserved\*\*\* systolic, but impaired diastolic function without overt congestive heart failure. In this model, acute pressure elevation induces reactive myocardial fibrosis (perivascular fibrosis followed by intermuscular interstitial fibrosis) and myocyte/left ventricular (LV) hypertrophy. Perivascular macrophage infiltration, which is mediated by monocyte chemoattractant protein-1 (MCP-1) and intercellular adhesion molecule-1, exerts a key role in myocardial fibrosis, but not in myocyte/LV hypertrophy. Transforming growth factor (TGF)-beta is crucial for reactive fibrosis in AC rats. MCP-1 function blocking not only inhibits macrophage infiltration and TGF-beta induction but also prevents reactive fibrosis and diastolic dysfunction, without affecting blood

(climacteric; in ripening bananas in relation to ethylene and aroma production)

IT Carboxylic acids, biological studies  
 RL: BPR (Biological process); BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); PROC (Process)  
 (esters; aroma production in ripening bananas in relation to respiration and ethylene)

IT Growth and development, plant  
 (fruit ripening; respiration, ethylene, and aroma production in ripening bananas)

IT Atmosphere (environmental)  
 (respiration, ethylene, and aroma production in bananas ripening in air or propylene)

IT Banana (Musa)  
 Odor and Odorous substances  
 (respiration, ethylene, and aroma production in ripening bananas)

IT 78-83-1, biological studies 106-27-4, 3-Methylbutyl butanoate  
 107-87-9, Pentan-2-one 110-19-0, 2-Methylpropyl acetate 123-51-3  
 123-92-2, 3-Methylbutyl acetate 141-78-6, Acetic acid ethyl ester, biological studies 539-90-2, 2-Methylpropyl butanoate 626-38-0, Pent-2-yl acetate 659-70-1, 3-Methylbutyl isovalerate 6032-29-7, Pentan-2-ol 60415-61-4, Pent-2-yl butanoate  
 RL: BPR (Biological process); BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); PROC (Process)  
 (aroma production in ripening bananas in relation to respiration and ethylene)

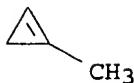
IT 3100-04-7, 1-Methylcyclopropene  
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)  
 (aroma volatiles of ripening bananas response to treatment with ethylene antagonist)

IT 115-07-1, 1-Propene, biological studies  
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (respiration, ethylene, and aroma production in bananas ripening in air or propylene)

IT 74-85-1, Ethene, biological studies  
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative)  
 (respiration, ethylene, and aroma production in ripening bananas)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)  
 (aroma volatiles of ripening bananas response to treatment with ethylene antagonist)

RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



application of methylcyclopropene under air and controlled atm  
storage conditions)

IT 3100-04-7, 1-Methylcyclopropene  
RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(apple cultivars response to postharvest application of methylcyclopropene under air and controlled atmospheric storage conditions)

RN 3100-04-7 HCPLUS  
CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 55 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 1999:197520 HCPLUS  
DOCUMENT NUMBER: 131:4452  
TITLE: Relationships between Respiration, Ethylene, and Aroma Production in Ripening Banana  
AUTHOR(S): Golding, J. B.; Shearer, D.; McGlasson, W. B.; Wyllie, S. G.  
CORPORATE SOURCE: Centre for Horticulture and Plant Sciences, University of Western Sydney, Richmond, 2753, Australia  
SOURCE: Journal of Agricultural and Food Chemistry (1999), 47(4), 1646-1651  
CODEN: JAFCAU; ISSN: 0021-8561  
PUBLISHER: American Chemical Society  
DOCUMENT TYPE: Journal  
LANGUAGE: English

AB Mature green bananas were treated with the ethylene antagonist 1-methylcyclopropene (1-MCP) at intervals during the 24 h period after initiation of ripening with propylene. Following 1-MCP treatment, the fruits were ripened in either air or propylene while ethylene, carbon dioxide, and volatile production and composition were monitored at regular intervals. The application of 1-MCP significantly delayed and suppressed the onset and magnitude of fruit respiration and volatile production. The 1-MCP treatments also caused a quant. change in the composition of the aroma volatiles, resulting in a substantial increase in the concentration of alcs. and a decrease in their related esters. The results showed that ethylene has a continuing role in integrating many of the biochem. processes that take place during the ripening of bananas.

CC 17-10 (Food and Feed Chemistry)  
Section cross-reference(s): 11  
ST banana ripening respiration ethylene aroma formation  
IT Alcohols, biological studies.  
RL: BPR (Biological process); BSU (Biological study, unclassified); MFM (Metabolic formation); BIOL (Biological study); FORM (Formation, nonpreparative); PROC (Process)  
(aroma production in ripening bananas in relation to respiration and ethylene)  
IT Respiration, plant

AUTHOR(S): Zanella, A.  
 CORPORATE SOURCE: Research Centre for Agriculture and Forestry Laimburg,

Post Auer, I-39040, Italy  
 SOURCE: Acta Horticulturae (2003), 600 (Vol. 1, Proceedings of  
 the 8th International Controlled Atmosphere Research  
 Conference, 2001, Volume 1), 271-275  
 CODEN: AHORA2; ISSN: 0567-7572

PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The effects of postharvest treatment with a novel antagonist of ethylene,  
 1-methylcyclopropene (1-MCP), have been compared with storage under  
 different atmospheric conditions and with the postharvest treatment applying  
 the

antioxidant diphenylamine (DPA) on scald susceptible apple fruits. Apples  
 cv. 'Granny Smith' harvested at Laimburg (South Tyrol, Italy) at early,  
 optimal and late harvest dates were treated with 1  $\mu$ l 1-1 1-MCP at room  
 temperature for 12 h and then stored under normal air condition, in controlled  
 atmospheric and in ultra low oxygen atmospheric (ULO) for a  
 period of 4 and 6 mo. Initial low oxygen stress (ILOS) at 0.4% O<sub>2</sub> for 2  
 wk after harvest was also applied, followed by ULO storage. 1-MCP reduced  
 completely the incidence of superficial scald under all long-term storage  
 conditions, even after 6 mo of storage in normal air. The total absence  
 of superficial scald was also observed on apples stored with ILOS followed by  
 ULO and on fruits treated with DPA, but not on DPA-untreated apples under  
 ULO conditions. The incidence of core flush - the major internal disease  
 - decreased with lower O<sub>2</sub> contents of different storage  
 atmospheres, but a considerable reduction was achieved by a  
 treatment with 1-MCP or DPA. A physiol. disease, limited to the surface  
 of the fruits, resembling the symptoms caused by inadequate O<sub>2</sub>/CO<sub>2</sub> equilibrium  
 during storage in controlled atmospheric, was observed on 1-MCP treated fruits  
 stored in controlled atmospheres. Fruits treated with 1-MCP maintained a  
 higher inner quality in terms of firmness and acidity after storage but  
 also after the following 7 and even after 14 days of shelf life at 20  
 °C, compared to untreated fruits. The content of total soluble solids  
 was not influenced by 1-MCP.

CC 17-10 (Food and Feed Chemistry)

IT Atmosphere (environmental)

(low-oxygen; control of apple scald by 1-MCP as compared to  
 DPA and storage under different atmospheric conditions)

IT 122-39-4, Diphenylamine, biological studies 3100-04-7,  
 1-Methylcyclopropene

RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (control of apple scald by 1-MCP as compared to DPA and storage under  
 different atmospheric conditions)

IT 7782-44-7, Oxygen, biological studies

RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (control of apple scald by 1-MCP as compared to DPA and storage under  
 low oxygen atmospheric)

IT 3100-04-7, 1-Methylcyclopropene

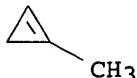
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (control of apple scald by 1-MCP as compared to DPA and storage under  
 different atmospheric conditions)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

In 2000, the 100 and 1000 ppb doses prevented fruit from ripening and depressed ethylene production until the end of storage, while the 10 ppb dose decreased its effect during storage. In 2001, the dose effect of 1-MCP was lower than in 2000, perhaps due to a more advanced maturity at harvest. Abbe Fetel pears in 2001 produced more ethylene in test fruits and were less sensible to 1-MCP treatment than Conference pears. The 1-MCP treatment kept a better flavor in ripe fruits. Even after a long storage in NA, ripe Abbe Fetel pears had a soft and juicy texture.

CC 17-10 (Food and Feed Chemistry)  
 ST methylcyclopropene ethylene fruit ripening texture  
 pear  
 IT Color  
 Flavor  
 Pyrus communis  
 (1-MCP effect on quality, fruit ripening, and ethylene production of pears during storage)  
 IT Food texture  
 (firmness; 1-MCP effect on quality, fruit ripening, and ethylene production of pears during storage)  
 IT Growth and development, plant  
 (fruit ripening; 1-MCP effect on quality, fruit ripening, and ethylene production of pears during storage)  
 IT Atmosphere (environmental)  
 (modified; 1-MCP effect on quality, fruit ripening, and ethylene production of pears during normal and controlled atmospheric storage)  
 IT 74-85-1, Ethylene, biological studies  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (1-MCP effect on quality, fruit ripening, and ethylene production of pears during storage)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (1-MCP effect on quality, fruit ripening, and ethylene production of pears during storage)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (1-MCP effect on quality, fruit ripening, and ethylene production of pears during storage)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 42 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2003:426584 HCPLUS  
 DOCUMENT NUMBER: 139:148733  
 TITLE: Control of apple scald - a comparison between 1-MCP and DPA postharvest treatments, ILOS and ULO storage

and pears)

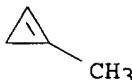
IT Malus (disease, scald; 1-methylcyclopropene (SmartFresh) as alternative to diphenylamine and modified atmospheric and controlled atmospheric storage for control of apple scald)

IT 122-39-4, Diphenylamine, biological studies  
RL: BSU (Biological study, unclassified); BIOL (Biological study) (1-methylcyclopropene (SmartFresh) as alternative to diphenylamine and modified atmospheric and controlled atmospheric storage of apples and pears)

IT 3100-04-7, 1-Methylcyclopropene  
RL: BSU (Biological study, unclassified); BIOL (Biological study) (1-methylcyclopropene (SmartFresh), as alternative to modified atmospheric and controlled atmospheric storage of apples and pears)

IT 3100-04-7, 1-Methylcyclopropene  
RL: BSU (Biological study, unclassified); BIOL (Biological study) (1-methylcyclopropene (SmartFresh) as alternative to modified atmospheric and controlled atmospheric storage of apples and pears)

RN 3100-04-7 HCPLUS  
CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 41 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2004:403581 HCPLUS  
DOCUMENT NUMBER: 141:224315  
TITLE: Effect of 1-MCP on the quality of pears during storage  
AUTHOR(S): Zerbini, P. Eccher; Cambiaghi, P.; Grassi, M.; Rizzolo, A.  
CORPORATE SOURCE: Istituto Sperimentale per la Valorizzazione Tecnologia dei Prodotti Agricoli, Milan, I-20133, Italy  
SOURCE: NATO Science Series, Series I: Life and Behavioural Sciences (2003), 349(Biology and Biotechnology of the Plant Hormone Ethylene III), 402-407  
CODEN: NSSSC9; ISSN: 1566-7693  
PUBLISHER: IOS Press  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB Conference pears in long term storage are susceptible to superficial scald. Abbe Fetel pears with long term storage in normal atmospheric (NA) lose their ripening ability, remaining firm, grainy and without flavor. Aim of the research was to assess the effect of different doses of 1-methylcyclopropene (1-MCP) on fruit quality, on ripening and ethylene producing ability, and on storage disorders of Conference and Abbe Fetel fruits stored in NA and CA. In the year 2000 pears were treated at harvest for 21 h at ambient temperature with 0, 10, 100 and 1000 ppb of 1-MCP and stored in NA, while in the year 2001 fruits were treated at harvest for 24 h at -0.5°C with 0, 10, 10+10 (at harvest and after 2 mo of storage), 50, 100 ppb of 1-MCP and stored in NA or CA.

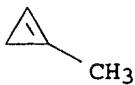


REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 40 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2003:426592 HCPLUS  
 DOCUMENT NUMBER: 139:148737  
 TITLE: 1-methylcyclopropene (SmartFresh) as an alternative to modified atmosphere and controlled atmosphere storage of apples and pears  
 AUTHOR(S): Crouch, Ian  
 CORPORATE SOURCE: Capespan Technology Development, Stellenbosch, 7599, S. Afr.  
 SOURCE: Acta Horticulturae (2003), 600 (Vol. 1, Proceedings of the 8th International Controlled Atmosphere Research Conference, 2001, Volume 1), 433-439  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB 1-Methylcyclopropene (1-MCP), also known as SmartFresh (0.14%), blocks ethylene action in harvested fruit. 1-MCP's mode of action is via a preferential attachment to the ethylene receptor, thereby blocking the effects of both endogenous and exogenous ethylene. The potential of 1-MCP as an alternative to modified atmospheric (MA) and controlled atmospheric (CA) storage of apples and pears was studied. Three concns. of 1-MCP were applied for 12 h at 20°C to 'Granny Smith' and 'Pink Lady' apples, and 'Bon Chretien' and 'Packham's Triumph' pears, harvested at the start and at the end of com. maturity. Apples and pears were examined after 2, 4 and 6 mo, or 6-wk of storage at -0.5°C resp., followed by a shelf-life period of 7 days at 15°C. 1-MCP-treated apples were firmer and less ripe than control fruit after storage and had higher levels of titratable malic acid and soluble solids. Untreated fruit developed superficial scald that was exacerbated with increased storage duration. By contrast, 1-MCP resulted in scald-free fruit for the full 6 mo of cold storage and during the 7-day shelf-life period. Treated pears showed no maturity differences at the start of shelf-life, but ripening was markedly held back during the shelf-life duration. However, 1-MCP-treated pears remained green after storage and ripened normally after 3 wk at 15°C. 1-MCP-treated fruit invariably had a firmer, crisper texture compared to untreated fruit. The significance of these findings is the potential use of 1-MCP as an alternative to MA and CA storage of apples and pears, and as a replacement for the use of DPA (diphenylamine) for the control of superficial scald in apples

CC 17-10 (Food and Feed Chemistry)  
 ST methylcyclopropene storage apple pear  
 IT Malus pumila  
 Pyrus communis

(1-methylcyclopropene (SmartFresh) as alternative to modified atmospheric and controlled atmospheric storage of apples



REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 43 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2003:962504 HCAPLUS  
 DOCUMENT NUMBER: 140:180483  
 TITLE: Softening response of 1-methylcyclopropene-treated banana fruit to high oxygen atmospheres  
 AUTHOR(S): Jiang, Yueming; Joyce, Daryl C.  
 CORPORATE SOURCE: South China Institute of Botany, Chinese Academy of Sciences, Guangzhou, 510650, Peop. Rep. China  
 SOURCE: Plant Growth Regulation (2003), 41(3), 225-229  
 CODEN: PGRED3; ISSN: 0167-6903  
 PUBLISHER: Kluwer Academic Publishers  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Exposure to high O<sub>2</sub> concns. may stimulate, have no effect or retard fruit ripening depending upon the commodity, O<sub>2</sub> concentration and storage time among other variables. The ethylene-binding inhibitor 1-methylcyclopropene (1-MCP) was used to investigate ethylene-mediated softening responses of Williams banana fruit exposed to elevated O<sub>2</sub> for various periods of time. Fruit softening was measured at 25 °C and 90% relative humidity. Exposure to high O<sub>2</sub> concns. for 5 days resulted in accelerated softening. Softening of fruit treated with 1-MCP for 12 h followed by 5 days of storage in high O<sub>2</sub> atmospheres at 25 °C was enhanced with increasing O<sub>2</sub> concentration between 21 and 100%. However, overall softening was much less compared to non-1-MCP-treated fruit. Softening of 1-MCP-treated fruit was progressively enhanced with increasing holding time from 5 to 20 days. Fruit treated with 1-MCP and then held for 10 days in high O<sub>2</sub> atmospheres followed by exposure to ethylene for 24 h and subsequent storage for 5 days at 25 °C softened more rapidly than those held in air for 10 days. 1-MCP-treated fruit held in various high O<sub>2</sub> atmospheres can regain gradually the sensitivity to ethylene and finally ripen over time. Enhanced softening of fruit exposed to elevated O<sub>2</sub> concns. suggests that high O<sub>2</sub> treatments enhance synthesis of new ethylene binding sites.

CC 17-10 (Food and Feed Chemistry)

ST methylcyclopropene ethylene banana softening oxygen environmental atm

IT Softening (mechanical)

(1-MCP effects on ethylene mediated fruit softening in banana during high O<sub>2</sub> atmosphere storage)

IT Growth and development, plant

(fruit ripening; 1-MCP effects on ethylene mediated fruit softening in banana during high O<sub>2</sub> atmosphere storage)

IT Atmosphere (environmental)

(modified; 1-MCP effects on ethylene mediated fruit softening in banana during high O<sub>2</sub> atmosphere storage)

IT Food texture

(softening; 1-MCP effects on ethylene mediated fruit softening in banana during high O<sub>2</sub> atmosphere storage)

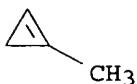
IT 74-85-1, Ethylene, biological studies  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (1-MCP effects on ethylene mediated fruit softening in banana  
 during high O<sub>2</sub> atmosphere storage)

IT 3100-04-7, 1-MCP  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
 ; BIOL (Biological study); USES (Uses)  
 (1-MCP effects on ethylene mediated fruit softening in banana  
 during high O<sub>2</sub> atmosphere storage)

IT 7782-44-7, Oxygen, biological studies  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (1-MCP effects on ethylene mediated fruit softening in banana  
 during high O<sub>2</sub> atmosphere storage)

IT 3100-04-7, 1-MCP  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
 ; BIOL (Biological study); USES (Uses)  
 (1-MCP effects on ethylene mediated fruit softening in banana  
 during high O<sub>2</sub> atmosphere storage)

RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 44 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:161780 HCPLUS  
 DOCUMENT NUMBER: 140:405842  
 TITLE: Apples... and beyond: future goals of 1-MCP  
 Warner, H.; Kollman, G.; Faubion, D.; Bates, B.  
 AUTHOR(S):  
 CORPORATE SOURCE: AgroFresh, Inc., Spring House, PA, 19477, USA  
 SOURCE: Acta Horticulturae (2003), 628(Vol. 1, Issues and Advances in Postharvest Horticulture, Volume 1), 221-226  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB On July 17, 2002, AgroFresh Inc. obtained EPA registration for SmartFresh Technol. containing 1-methylcyclopropene (1-MCP) for use in apples, pears, avocado, tomato, melons, peaches, nectarines, plums, apricots, persimmons, kiwifruit, papaya and mango. AgroFresh Inc. com. introduced 1-MCP as SmartFresh early in 2002 in Chile and Argentina and will introduce the technol. in the Fall of 2002 to the US apple packers as a new innovative postharvest tool to maintain high fruit quality during cold storage, transit and market supply channels. In preparation for com. introduction, AgroFresh, Inc. along with Washington State University conducted 80 demonstration trials at 34 different apple packers in the state of Washington over the 2001-2002 storage season. 1-MCP combined with controlled atmospheric (CA) storage consistently provided the highest firmness as well as titratable acidity and soluble sugars after 6 mo storage plus 7 days ripening at room temperature. Results from 1-MCP treated apples stored in regular air (RA) were statistically equivalent to untreated CA, the current industry standard for

storing apples. AgroFresh Inc. is actively testing use concepts for 1-MCP in pears, avocado, tomato, melons, papaya, and mango with emphasis on improving quality and market life. Active research programs are underway to develop product concepts in banana, persimmon, stone fruit, kiwifruit, green vegetables and exotic tropical fruits. 1-MCP in combination with MA packaging has shown promise for extending the market life and quality of vine and tree ripe fruits and green vegetables. Also, when applications are made to the whole fruit, 1-MCP holds promise for extending the market life of fresh-cut melons and tropical fruit.

CC 17-10 (Food and Feed Chemistry)  
 ST methylcyclopropene SmartFresh apple shelf life  
 IT Genotypes  
     Malus pumila  
       (1-MCP in SmartFresh technol. pos. effects on shelf life and storage quality of apples)  
 IT Atmosphere (environmental)  
       (controlled; 1-MCP in SmartFresh technol. pos. effects on shelf life and storage quality of apples)  
 IT Food texture  
       (firmness; 1-MCP in SmartFresh technol. pos. effects on shelf life and storage quality of apples)  
 IT 3100-04-7, 1-Methylcyclopropene  
   RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
   ; BIOL (Biological study); USES (Uses)  
       (1-MCP in SmartFresh technol. pos. effects on shelf life and storage quality of apples)  
 IT 3100-04-7, 1-Methylcyclopropene  
   RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
   ; BIOL (Biological study); USES (Uses)  
       (1-MCP in SmartFresh technol. pos. effects on shelf life and storage quality of apples)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX, NAME)



REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 45 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2003:946517 HCPLUS  
 DOCUMENT NUMBER: 140:41076  
 TITLE: Effect of 1-methylcyclopropene (1-MCP) on the activity profile of enzymes associated with starch degradation in bananas (*Musa acuminata* AAA cv. Nanicao)  
 AUTHOR(S): Mainardi, Janaina Aparecida; Purgato, Eduardo; Lajolo, Franco Maria  
 CORPORATE SOURCE: Departamento de Alimentos e Nutricao Experimental, Universidade de Sao Paulo, Brazil  
 SOURCE: Revista Brasileira de Ciencias Farmaceuticas (2003), 39(Supl. 3), 150-152  
 CODEN: RBCFFM; ISSN: 1516-9332  
 PUBLISHER: Universidade de Sao Paulo, Faculdade de Ciencias Farmaceuticas

DOCUMENT TYPE:

Journal

LANGUAGE:

Portuguese

AB The food preservative 1-MCP can bind to the receptors of ethylene (plant hormone) and inhibit its effects on banana maturation. Bananas were stored under controlled atmospheric (relative humidity, temperature) and treated with 1-MCP or ethylene. The production of ethylene and CO<sub>2</sub>

and the levels of starch and soluble sugars were monitored during the fruit maturation. The maturation process was retarded in bananas treated with 1-MCP, with concurrent changes in the activities of  $\alpha$ - and  $\beta$ -amylase and phosphorylase. Thus, 1-MCP can block ethylene receptors and inhibit banana fruit maturation, but its effects on starch-degrading enzymes is ambivalent.

CC 17-4 (Food and Feed Chemistry)

ST banana preservation ethylene methylcyclopropene amylase phosphorylase

IT Food preservation

Musa

(bananas (Musa acuminata) preservation with 1-methylcyclopropene (1-MCP) and effects on activities of starch-degrading enzymes)

IT 9000-90-2,  $\alpha$  Amylase 9000-91-3,  $\beta$  Amylase 9035-74-9, Glycogen Phosphorylase

RL: BSU (Biological study, unclassified); BIOL (Biological study) (bananas (Musa acuminata) preservation with 1-methylcyclopropene (1-MCP) and effects on activities of starch-degrading enzymes)

IT 57-50-1, Sucrose, biological studies 124-38-9, Carbon dioxide, biological studies

RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses) (bananas (Musa acuminata) preservation with 1-methylcyclopropene (1-MCP) and effects on activities of starch-degrading enzymes)

IT 74-85-1, Ethylene, biological studies 3100-04-7, 1-Methylcyclopropene

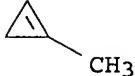
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses) (bananas (Musa acuminata) preservation with 1-methylcyclopropene (1-MCP) and effects on activities of starch-degrading enzymes)

IT 3100-04-7, 1-Methylcyclopropene

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses) (bananas (Musa acuminata) preservation with 1-methylcyclopropene (1-MCP) and effects on activities of starch-degrading enzymes)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 46 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:564173 HCPLUS

DOCUMENT NUMBER: 139:363883

TITLE: Control of bitter rot and blue mold of apples by integrating heat and antagonist treatments on 1-MCP treated fruit stored under controlled atmosphere conditions

AUTHOR(S): Janisiewicz, Wojciech J.; Leverenz, Britta; Conway, William S.; Saftner, Robert A.; Reed, A. N.; Camp, Mary J.

CORPORATE SOURCE: Agricultural Research Service, Appalachian Fruit Research Station, US Department of Agriculture, Kearneysville, WV, 25430, USA

SOURCE: Postharvest Biology and Technology (2003), 29(2), 129-143

PUBLISHER: Elsevier Science Ltd.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Fruit treatment with hot air (at 38 °C) for 4 d has eradicative but no residual activity against blue mold (caused by *Penicillium expansum*) on apple, and 1-methylcyclopropene (1-MCP) is an ethylene receptor inhibitor which slows apple maturation and, presumably, extends action of natural defense mechanisms. An antagonist, *Metschnikowia pulcherrima* T5-A2, was used in combination with heat and 1-MCP treatments to control bitter rot (caused by *Colletotrichum acutatum*) and blue mold (caused by *P. expansum*) on Golden Delicious' apples under controlled atmospheric (CA) conditions. 1-MCP treatment increased bitter rot and blue mold decays, but both of these decays were effectively controlled on 1-MCP treated apples by a combination of the antagonist and heat treatments. C. acutatum is a weaker pathogen than *P. expansum*, and bitter rot, even on the control treatments, developed only after 4 mo in CA storage followed by 2 wk incubation at 24 °C. In contrast, non-treated fruit inoculated with *P. expansum* were completely decayed after 2 mo in CA. The antagonist controlled bitter rot more effectively than blue mold, while blue mold was more effectively controlled by heat treatment. The use of 1-MCP on harvested fruit to inhibit maturation can predispose fruit to decay, but the alternatives to synthetic fungicides are capable of preventing this increase in decay.

CC 17-10 (Food and Feed Chemistry)

Section cross-reference(s): 5

ST apple blue mold bitter rot control heat *Metschnikowia*

IT *Malus pumila*

(Golden Delicious; control of bitter rot and blue mold of apples by integrating heat and antagonist treatments on 1-MCP treated fruit stored under controlled atmospheric conditions)

IT *Colletotrichum acutatum*

*Metschnikowia pulcherrima*

*Penicillium expansum*

(control of bitter rot and blue mold of apples by integrating heat and antagonist treatments on 1-MCP treated fruit stored under controlled atmospheric conditions)

IT Temperature effects, biological

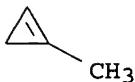
(heat; control of bitter rot and blue mold of apples by integrating heat and antagonist treatments on 1-MCP treated fruit stored under controlled atmospheric conditions)

IT 3100-04-7, 1-Methylcyclopropene

RL: BSU (Biological study, unclassified); BIOL (Biological study)

(control of bitter rot and blue mold of apples by integrating heat and antagonist treatments on 1-MCP treated fruit stored

under controlled atmospheric conditions)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (control of bitter rot and blue mold of apples by integrating  
 heat and antagonist treatments on 1-MCP treated fruit stored  
 under controlled atmospheric conditions)  
 RN 3100-04-7 HCAPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 39 THERE ARE 39 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 47 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2003:51941 HCAPLUS  
 DOCUMENT NUMBER: 138:254114  
 TITLE: Effects of 1-methylcyclopropene and heat treatments on ripening and postharvest decay in 'Golden Delicious' apples  
 AUTHOR(S): Saftner, Robert A.; Abbott, Judith A.; Conway, William S.; Barden, Cynthia L.  
 CORPORATE SOURCE: Produce Quality and Safety Laboratory, Beltsville Agricultural Research Center, Agricultural Research Service, United States Department of Agriculture, Beltsville, MD, 20705, USA  
 SOURCE: Journal of the American Society for Horticultural Science (2003), 128(1), 120-127  
 CODEN: JOSHB5; ISSN: 0003-1062  
 PUBLISHER: American Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Prestorage heat, CA storage, and pre- and poststorage treatments with the ethylene action inhibitor, 1-methylcyclopropene (MCP), were tested for their efficacy at inhibiting fungal decay and maintaining quality in 'Golden Delicious' apples [*Malus sylvestris* (L.) Mill. Yellow Delicious Group] stored 0 to 5 mo at 0 °C and 7 days at 20 °C. Before storage in air at 0 °C, preclimacteric fruit were treated with either MCP at 1  $\mu\text{L}\cdot\text{L}^{-1}$  for 17 h at 20 °C, 38 °C air for 4 days, MCP plus heat, or left untreated. Some sets of untreated fruit were stored in a controlled atmospheric of 1.5 kPa O<sub>2</sub> and 2.5 kPa CO<sub>2</sub> at 0 °C while other sets were removed from cold storage in air after 2.5 or 5 mo, warmed to 20 °C, and treated with 1  $\mu\text{L}\cdot\text{L}^{-1}$  MCP for 17 h. Prestorage MCP, heat, MCP plus heat treatments and CA storage decreased decay severity caused by wound-inoculated *Penicillium expansum* Link, *Botrytis cinerea* Pers.:Fr., and *Colletotrichum acutatum* (teleomorph *Glomerella acutata*). Poststorage MCP treatment had no effect on decay severity. Both prestorage MCP treatment and CA storage delayed ripening as indicated by better retention of green peel color, titratable acidity, and Magness-Taylor flesh firmness, and the reduced respiration, ethylene production rates, and volatile levels that were observed upon transferring the fruit to 20 °C. The prestorage MCP treatment delayed ripening more than CA storage. Following 5 mo cold storage, the prestorage MCP treatment maintained the shape of the compression

force/deformation curve compared with that of fruit at harvest, as did CA storage, but at a lower force profile. The heat treatment had mixed effects on ripening: it hastened loss of green peel color and titratable acidity, but maintained firmness and delayed increases in respiration, ethylene production and volatile levels following cold storage. The MCP plus heat treatment inhibited ripening more than heat treatment alone but less than MCP treatment alone. In one of 2 yr, the MCP plus heat treatment resulted in superficial injury to some of the fruit. Thus, MCP may provide an effective alternative to CA for reducing decay severity and maintaining quality during postharvest storage of 'Golden Delicious' apples. Prestorage heat to control decay and maintain quality of apples needs further study, especially if used in combination with MCP.

CC 17-10 (Food and Feed Chemistry)  
 ST apple ripening storage methylcyclopropene  
 IT Malus pumila  
     (Golden Delicious; effects of 1-methylcyclopropene and heat treatments on ripening and postharvest decay in Golden Delicious apples)  
 IT Botrytis cinerea  
     Colletotrichum acutatum  
     Penicillium expansum  
     (effects of 1-methylcyclopropene and heat treatments on ripening and postharvest decay in Golden Delicious apples caused by)  
 IT Growth and development, plant  
     (fruit ripening; effects of 1-methylcyclopropene and heat treatments on ripening and postharvest decay in Golden Delicious apples caused by)  
 IT Temperature effects, biological  
     (heat; effects of 1-methylcyclopropene and heat treatments on ripening and postharvest decay in Golden Delicious apples)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: BSU (Biological study, unclassified); BIOL (Biological study)  
     (effects of 1-methylcyclopropene and heat treatments on ripening and postharvest decay in Golden Delicious apples)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: BSU (Biological study, unclassified); BIOL (Biological study)  
     (effects of 1-methylcyclopropene and heat treatments on ripening and postharvest decay in Golden Delicious apples)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

 CH<sub>3</sub>

REFERENCE COUNT: 47 THERE ARE 47 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 48 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:403445 HCPLUS  
 DOCUMENT NUMBER: 141:224312  
 TITLE: CO<sub>2</sub> action on ethylene production of 1-MCP treated pear and tomato fruit

AUTHOR(S): De Wild, H. P. J.; Fernandes, E. C. A.; Staal, M. G.

CORPORATE SOURCE: Agrotechnological Research Institute (ATO),  
Wageningen, 6700 AA, Neth.

SOURCE: NATO Science Series, Series I: Life and Behavioural  
Sciences (2003), 349(Biology and Biotechnology of the  
Plant Hormone Ethylene III), 89-93  
CODEN: NSSSC9; ISSN: 1566-7693

PUBLISHER: IOS Press

DOCUMENT TYPE: Journal

LANGUAGE: English

AB To study the influence of 1-methylcyclopropene (1-MCP) and CO<sub>2</sub> on ethylene production rate at 18 °C, pear and tomato fruits were treated with 50 ppm 1-MCP and subsequently exposed to a range of CO<sub>2</sub> partial pressures (0 to 20 kPa) during 5 days. 1-MCP treatment strongly inhibited ethylene production of pears and slightly inhibited ethylene production of tomatoes. The ethylene production of control pears (no 1-MCP, no CO<sub>2</sub>) increased between day 2 and day 5 which represented the climacteric rise. Pre-treatment with 1-MCP prevented this climacteric rise. Ethylene production of control tomatoes decreased during the exptl. period, which indicated the end of climacteric. The 1-MCP treatment retarded this decrease. Treatment with 1-MCP was done in a sufficiently high concentration and exposure time to reach its maximum effect on reduction of ethylene production. While 1-MCP had

reached its maximum effect, application of CO<sub>2</sub> was able to further inhibit ethylene production. Exposure to elevated CO<sub>2</sub> partial pressures reduced ethylene production in both 1-MCP treated and untreated fruits. In general the effect of CO<sub>2</sub> became stronger with increasing CO<sub>2</sub> partial pressures. These results demonstrated that the inhibiting action of CO<sub>2</sub> on ethylene production cannot only be directed to the ethylene receptor binding site.

CC 17-10 (Food and Feed Chemistry)

ST carbon dioxide pressure methylcyclopropene ethylene tomato pear

IT Lycopersicon esculentum

Pressure

Pyrus communis

Respiration, plant

(CO<sub>2</sub> action on ethylene production of 1-MCP treated pear and tomato)

IT 124-38-9, Carbon dioxide, biological studies 3100-04-7,

1-Methylcyclopropene

RL: BSU (Biological study, unclassified); FFD (Food or feed use)

; BIOL (Biological study); USES (Uses)

(CO<sub>2</sub> action on ethylene production of 1-MCP treated pear and tomato)

IT 3100-04-7, 1-Methylcyclopropene

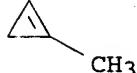
RL: BSU (Biological study, unclassified); FFD (Food or feed use)

; BIOL (Biological study); USES (Uses)

(CO<sub>2</sub> action on ethylene production of 1-MCP treated pear and tomato)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 49 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN

"Redchief Delicious" apple, especially for relatively short storage durations (<50 days) when fruit are harvested within a week of the ethylene climacteric. Chemical name used: 1-methylcyclopropene (1-MCP).

CC 17-10 (Food and Feed Chemistry)

ST methylcyclopropene apple storage acidity firmness chlorophyll fluorescence

IT Acidity

    Atmosphere (environmental)

Food functional properties

Malus pumila

Storage

    (1-MCP effect on firmness retention and chlorophyll fluorescence of "redchief delicious" apples influenced by harvest maturity and storage temperature)

IT Chlorophylls, analysis

RL: ANT (Analyte); ANST (Analytical study)

    (1-MCP effect on firmness retention and chlorophyll fluorescence of "redchief delicious" apples influenced by harvest maturity and storage temperature)

IT 3100-04-7, 1-Methylcyclopropene

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)

    (1-MCP effect on firmness retention and chlorophyll fluorescence of redchief delicious apples influenced by harvest maturity and storage temperature)

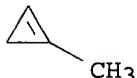
IT 3100-04-7, 1-Methylcyclopropene

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)

    (1-MCP effect on firmness retention and chlorophyll fluorescence of redchief delicious apples influenced by harvest maturity and storage temperature)

RN 3100-04-7 HCAPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 20 THERE ARE 20 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 52 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:712579 HCAPLUS

DOCUMENT NUMBER: 136:293818

TITLE: Use of a gas-releasing patch to regulate ethylene-mediated plant responses

AUTHOR(S): Mir, Nazir A.; Beaudry, Randolph M.

CORPORATE SOURCE: Department of Horticulture, Michigan State University, East Lansing, MI, 48824, USA

SOURCE: Acta Horticulturae (2001), 553 (Vol. 2, Proceedings of the 4th International Conference on Postharvest Science, 2000, Volume 2), 581-582

PUBLISHER: International Society for Horticultural Science

DOCUMENT TYPE: Journal

LANGUAGE: English

AB A gas-releasing patch was developed to promote or inhibit fruit ripening. The patch can be implemented potentially at any stage in the distribution chain. Its use on regulation of banana ripening is demonstrated as a model system. Two polymeric films,

one impermeable [Mylar (polyoxyethylene oxyterephthaloyl)] and another highly permeable to gases (low d. polyethylene) were heat sealed to make a small gas-releasing patch. The patch contained a gas-releasing compound and a reactive triggering material that needed to cause gas release when mixed with the gas-releasing compound. When the reaction was triggered, ethylene and 1-methycyclopropene (1-MCP) release were rapid, essentially unidirectional, and of sufficient duration and amount to instigate the desired responses. The gas releasing patch can be used to either promote or inhibit ripening of individual fruits. Ethylene and other growth affecting gases have been used in storage rooms to modify the natural development of plant materials, including whole plants and their parts, such as fruits and vegetables. However, storage rooms are typically only used by wholesalers and others dealing in bulk quantities.

CC 17-10 (Food and Feed Chemistry)  
 ST banana ripening modified atm ethylene  
 methycyclopropene  
 IT Growth and development, plant  
 (fruit ripening; gas-releasing patch use to  
 regulate ethylene-mediated plant responses)  
 IT Atmosphere (environmental)  
 Musa  
 (gas-releasing patch use to regulate ethylene-mediated plant responses)  
 IT 74-85-1, Ethylene, biological studies 3100-04-7, Cyclopropene,  
 1-methyl-  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (gas-releasing patch use to regulate ethylene-mediated plant responses)  
 IT 3100-04-7, Cyclopropene, 1-methyl-  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (gas-releasing patch use to regulate ethylene-mediated plant responses)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 53 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2000:415041 HCPLUS  
 DOCUMENT NUMBER: 133:134385  
 TITLE: Inhibitory effect of 1-MCP on ripening and  
 superficial scald development in 'McIntosh' and  
 'Delicious' apples  
 AUTHOR(S): Rupasinghe, H. P. V.; Murr, D. P.; Paliyath, G.; Skog,  
 L.  
 CORPORATE SOURCE: Horticultural Science Division, University of Guelph,  
 Guelph, ON, N1G 2W1, Can.  
 SOURCE: Journal of Horticultural Science & Biotechnology  
 (2000), 75(3), 271-276  
 CODEN: JHSBFA; ISSN: 1462-0316  
 PUBLISHER: Headley Brothers Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB 'McIntosh' and 'Delicious' apple were treated with the  
 competitive ethylene (C<sub>2</sub>H<sub>4</sub>) antagonist 1-methylcyclopropene (1-MCP), to

evaluate its feasibility as a postharvest tool for use by the apple industry. The threshold concentration of 1-MCP required to inhibit de novo C<sub>2</sub>H<sub>4</sub> production and action was 1  $\mu$ L L-1. 1-MCP treatment completely inhibited C<sub>2</sub>H<sub>4</sub> production in apples for 6-10 days at 20° following storage at 0° in air or controlled atm. for 60 or 120' days. 1-MCP-treated apples were significantly firmer (13 to 20 N) than untreated apples following storage and post-storage handling for 7 to 14 d at 20°. Total soluble solids of apples was not affected by 1-MCP treatment. Inhibition of total volatiles and  $\alpha$ -farnesene emanated by apples by 1-MCP treatment was parallel to the inhibition of C<sub>2</sub>H<sub>4</sub> production by 1-MCP. Contents of  $\alpha$ -farnesene and its putative superficial scald causing catabolite, conjugated triene alc., in the skin were reduced 60 to 98% by  $\geq$  1  $\mu$ L L-1 1-MCP. Treatment with 1-MCP suppressed the incidence of superficial scald in 'McIntosh' and 'Delicious' apples by 30% and 90%, resp.

CC 17-4 (Food and Feed Chemistry)  
 ST apple ripening scald methylcyclopropene  
 IT Apple  
     (disease, scald; inhibition by 1-MCP of ripening and scald in apple)  
 IT Volatile substances  
     (inhibition by 1-MCP of formation of total volatiles and  $\alpha$ -farnesene in apple)  
 IT Fruit  
     (inhibition by 1-MCP of ripening and scald in apple)  
 IT 67832-25-1  
     RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)  
     (formation inhibition by 1-MCP in apple)  
 IT 502-61-4,  $\alpha$ -Farnesene  
     RL: BPR (Biological process); BSU (Biological study, unclassified); BIOL (Biological study); PROC (Process)  
     (inhibition by 1-MCP of formation of total volatiles and  $\alpha$ -farnesene in apple)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: BUU (Biological use, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
     (inhibition by 1-MCP of ripening and scald in apple)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: BUU (Biological use, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
     (inhibition by 1-MCP of ripening and scald in apple)  
 RN 3100-04-7 HCAPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 54 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2000:285030 HCAPLUS

DOCUMENT NUMBER: 133:149662  
 TITLE: Responses of early, mid and late season apple cultivars to postharvest application of 1-methylcyclopropene (1-MCP) under air and controlled atmosphere storage conditions  
 AUTHOR(S): Watkins, C. B.; Nock, J. F.; Whitaker, B. D.  
 CORPORATE SOURCE: Department of Fruit and Vegetable Science, Cornell University, Ithaca, NY, USA  
 SOURCE: Postharvest Biology and Technology (2000), 19(1), 17-32  
 CODEN: PBTEED; ISSN: 0925-5214  
 PUBLISHER: Elsevier Science Ireland Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The potential for com. application of 1-methylcyclopropene (1-MCP) to maintain quality of 'McIntosh', 'Empire', 'Delicious' and 'Law Rome' apples under air and controlled atmospheric (CA) storage conditions was investigated. These cultivars represent early, mid and late season apples with ripening rates ranging from fast to slow. 1-MCP gas concns. used were 0.5, 1 and 2  $\mu$ L L-1, generated from measured amts. of EthylBloc powder. Fruit of each cultivar were removed from storage at 6 wk intervals during 30 wk in air, or at 8 wk intervals during 32 wk in CA, and evaluated after 1 and 7 days at 20°C. Effects of 1-MCP were greater in CA than air storage. A dose response of internal ethylene concns. and flesh firmness to 1-MCP was found in 'McIntosh' and 'Law Rome', but 'Delicious' and 'Empire' ripening was generally prevented by all 1-MCP concns. 1-MCP reduced superficial scald incidence, and accumulations of  $\alpha$ -farnesene and conjugated trienols during air storage. The results indicate that the efficacy of 1-MCP is affected by cultivar and storage conditions, and that successful com. utilization of the chemical will require understanding of these relationships.

CC 17-10 (Food and Feed Chemistry)  
 Section cross-reference(s): 11

ST apple storage methylcyclopropene ethylene softening

IT Atmosphere (environmental)  
 (controlled; apple cultivars response to postharvest application of methylcyclopropene under air and controlled atm . storage conditions)

IT Apple  
 (disease, scald; apple cultivars response to postharvest application of methylcyclopropene under air and controlled atm . storage conditions)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: BAC (Biological activity or effector, except adverse); BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (apple cultivars response to postharvest application of methylcyclopropene under air and controlled atmospheric storage conditions)

IT 74-85-1, Ethylene, biological studies  
 RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence)  
 (apple cultivars response to postharvest application of methylcyclopropene under air and controlled atmospheric storage conditions)

IT 502-61-4,  $\alpha$ -Farnesene  
 RL: BOC (Biological occurrence); BSU (Biological study, unclassified); BIOL (Biological study); OCCU (Occurrence)  
 (scald-associated; apple cultivars response to postharvest

including apple, ornamental plants, shrubbery, and tree seedlings.

DETD . . . dosage include mixing the ingredients and passing the mixed powder into a die, and then compressing the die in a pressure between about 5 to about 8 kg/cm.sup.2 into a dosage.

DETD . . . may be packaged at a low passing the mixed powder into a die, and then compressing the die in a pressure between about 5 to about 8 kg/cm.sup.2 into a dosage.

DETD . . . using a tablet press equipped with a mold of given size and shape, the powder blend is subjected to compression pressured at about 8 kg/cm.sup.2. The tablets are then inspected and stored at a low relative humidity for subsequent packaging in . . .

IT 121-46-0, 2,5-Norbornadiene 931-87-3, cis-Cyclooctene 931-89-5, trans-Cyclooctene 1192-27-4, Diazocyclopentadiene 2781-85-3, Cyclopropene 3100-04-7, 1-MethylCyclopropene 3907-06-0, 3,3-DiMethylCyclopropene 4095-06-1, MethyleneCyclopropene (active ingredient in effervescent tablets for counteracting an ethylene response in plants)

IT 2781-85-3, Cyclopropene 3100-04-7, 1-MethylCyclopropene (active ingredient in effervescent tablets for counteracting an ethylene response in plants)

RN 2781-85-3 USPATFULL

CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 3100-04-7 USPATFULL

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



CH<sub>3</sub>

L96 ANSWER 82 OF 87 USPATFULL on STN

ACCESSION NUMBER: 2004:108078 USPATFULL

TITLE: Synthesis methods, complexes and delivery methods for the safe and convenient storage, transport and application of compounds for inhibiting the ethylene response in plants

INVENTOR(S): Daly, James, Walterboro, SC, UNITED STATES  
Kourelis, Bob, Chicago, IL, UNITED STATES

NUMBER	KIND	DATE
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PATENT INFORMATION: US 2004082480 A1 20040429

APPLICATION INFO.: US 2001-957942 A1 20010921 (9)

RELATED APPLN. INFO.: Division of Ser. No. US 1999-367654, filed on 20 Aug 1999, GRANTED, Pat. No. US 6313068 Continuation-in-part of Ser. No. US 1998-137056, filed on 20 Aug 1998, GRANTED, Pat. No. US 6017849

DOCUMENT TYPE: Utility

FILE SEGMENT: APPLICATION

LEGAL REPRESENTATIVE: SONNENSCHEIN NATH & ROSENTHAL, Wacker Drive Station, Sears Tower, P. O. Box 061080, Chicago, IL, 60606-1080

important effects of ethylene include processes associated with the ripening of fruits, the senescence of flowers, and the abscission of leaves. The commercial value of fresh produce is usually reduced by the excessive amount of ethylene gas which hastens the ripening of fruits, the senescence of flowers, and the early abscission of leaves.

SUMM . . . is effective at a very low dosage, in the parts per billion range, and is safe to be used in fruits and vegetables, as well as flowers. Methylcyclopropene is readily undergoing oxidation and other reactions so that it is highly unstable. Most recently, U.S. Pat. No. 6,017,849. . . .

SUMM . . . meter of the sealed space results in a final methylcyclopropene concentration of 900 parts per billion. The shelf life of flowers, fruits and vegetables can be significantly ended if they are exposed at this concentration for at least 4 hours as a post-harvest treatment.

DETD . . . the present invention, the term "plant" is intended to include woody-stemmed plants in addition to field crops, potted plants, cut flowers, harvested fruits, vegetables and ornamentals.

DETD . . . be initiated by either exogenous or endogenous sources of ethylene. Ethylene responses include, for example, the ripening and/or senescence, of flowers, fruits and vegetables; the abscission of foliage, flowers and fruit; the ripening and/or shortening of the life of ornamentals, such as potted plants, cut flowers, shrubbery and dormant seedlings; the inhibition of growth in some plants such as the pea plant; and the stimulation of. . . .

DETD According to the present invention, vegetables which may be treated to inhibit senescence include leafy green vegetables such as lettuce (e.g., *Lactuca sativa*), spinach (*Spinaca oleracea*) and cabbage (*Brassica oleracea*; various roots such as potatoes (*Solanum tuberosum*), . . .

DETD According to the present invention, fruits which may be treated to inhibit ripening include tomatoes (*Lycopersicon esculentum*), apples (*Malus domestica*), bananas (*Musa sapientum*), pears (*Pyrus communis*), papaya (*Carica papaya*), mangoes (*Mangifera indica*), peaches (*Prunus persica*), apricots (*Prunus armeniaca*), nectarines (*Prunus persica nectarina*), oranges (*Citrus* sp.), lemons (*Citrus limonia*), limes (*Citrus aurantifolia*), grapefruit (*Citrus paradisi*), tangerines (*Citrus nobilis deliciosa*), kiwi (*Actinidia Chinensis*), melons such as cantaloupes (*C. cantalupensis*) and musk melons (*C. melo*), pineapples (*Ananas comosus*), persimmon (*Diospyros* sp.) and raspberries (e.g., *Fragaria* or *Rubus ursinus*), blueberries (*Vaccinium* sp.), green beans (*Phaseolus vulgaris*), members of the genus. . . .

DETD According to the present invention, ornamental plants which may be treated to inhibit senescence and/or to prolong flower life and appearance (such as the delay of wilting), include potted ornamentals and cut flowers. Potted ornamentals and cut flowers which may be treated with the methods of the present invention include azalea (*Rhododendron* spp.), hydrangea (*Macrophylla hydrangea*), hibiscus (*Hibiscus*), . . .

DETD According to the present invention, plants which may be treated to inhibit abscission of foliage, flowers and fruit include cotton (*Gossypium* spp.), apples, pears, cherries (*Prunus avium*), pecans (*Carica illinoensis*), grapes (*Vitis vinifera*), olives (e.g., *Olea europaea*), coffee (*Coffea arabica*), snapbeans (*Phaseolus vulgaris*), and weeping fig (*Ficus benjamina*), as well as dormant seedlings such as various fruit trees

PATENT INFORMATION: US 2005261131 A1 20051124  
 APPLICATION INFO.: US 2005-131614 A1 20050518 (11)

NUMBER DATE

PRIORITY INFORMATION: US 2004-572743P 20040519 (60)  
 DOCUMENT TYPE: Utility  
 FILE SEGMENT: APPLICATION  
 LEGAL REPRESENTATIVE: ROHM AND HAAS COMPANY, PATENT DEPARTMENT, 100  
 INDEPENDENCE MALL WEST, PHILADELPHIA, PA, 19106-2399,  
 US

NUMBER OF CLAIMS: 10  
 EXEMPLARY CLAIM: 1  
 LINE COUNT: 553

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A composition is provided that contains one or more molecular encapsulation agents within each of which is encapsulated one or more cyclopropenes and that contains one or more adjuvants selected from the group consisting of surfactants, alcohols, hydrocarbon oils, and mixtures thereof. Also provided is a method that includes the step of contacting such compositions to one or more plants or plant parts.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM Ethylene can cause the premature death of plants or plant parts including, for example, flowers, leaves, fruits, and vegetables through binding with certain receptors in the plant. Ethylene also promotes leaf yellowing and stunted growth as well as premature fruit, flower, and leaf drop. Cyclopropenes (i.e., substituted and unsubstituted cyclopropene and its derivatives) are effective agents for blocking the effects of. . . with cyclopropenes is that many useful cyclopropenes are gasses at ambient conditions (10 to 35° C. and approximately 1 atmosphere pressure); thus, in some cases, the cyclopropene tends to escape into the atmosphere instead of remaining in contact with the plant. . .

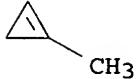
DETD . . . invention is used to treat plants or plant parts. Plant parts include any part of a plant, including, for example, flowers, blooms, seeds, cuttings, roots, bulbs, fruits, vegetables, leaves, and combinations thereof. In some embodiments, a composition of the present invention is used to treat one or more of blooms, fruits, and vegetables.

IT 3100-04-7, 1-Methylcyclopropene  
 (cyclopropene containing formulations for controlling epinasty in plants)

IT 3100-04-7, 1-Methylcyclopropene  
 (cyclopropene containing formulations for controlling epinasty in plants)

RN 3100-04-7 USPATFULL

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

  
 CH<sub>3</sub>

L96 ANSWER 80 OF 87 USPATFULL on STN  
 ACCESSION NUMBER: 2005:287385 USPATFULL  
 TITLE: Humidity activated delivery systems for cyclopropenes  
 INVENTOR(S): Jacobson, Richard Martin, Chalfont, PA, UNITED STATES  
 Wehemyer, Fiona Linette, Roslyn, PA, UNITED STATES

EXEMPLARY CLAIM:

1

LINE COUNT:

558

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB A composition is provided that contains a cyclopropene and a metal-complexing agent. Also provided is a method that includes contacting such compositions to plants or plant parts.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM Ethylene can cause the premature death of plants or plant parts including, for example, flowers, leaves, fruits, and vegetables through binding with certain receptors in the plant. Ethylene also promotes leaf yellowing and stunted growth as well as premature fruit, flower, and leaf drop. Cyclopropenes (i.e., substituted and unsubstituted cyclopropene and its derivatives) are effective agents for blocking the effects of. . .

DETD . . . allows cyclopropene to contact the plants or plant parts. Plant parts include any part of a plant, including, for example, flowers, blooms, seeds, cuttings, roots, bulbs, fruits, vegetables, leaves, and combinations thereof. In some embodiments, a composition of the present invention is used to treat one or more of blooms, fruits, and vegetables.

DETD . . . 25 ml/min.

Column: Chrompack CP-PoraPlot Q-HT  
 Dimensions: 10 m + 0.32 mm i.d.  
 Film Thickness: 10 microns  
 Carrier Gas: Helium  
 Flow Rate: 2.5 ml/min  
 Column Head Pressure: 6 psi  
 Injection Port Temperature: 150 deg. C.  
 Initial Temperature: 35 deg. C.  
 Initial Time: 0.5 min.  
 Program Rate 1: 20 deg. C./min.

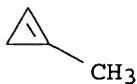
Final Temperature: . . .

IT 3100-04-7, 1-Methylcyclopropene 7732-18-5, Water, biological studies 15158-11-9, biological studies (cyclopropenes and metal chelating compns. for controlling plant epinasty for)

IT 3100-04-7, 1-Methylcyclopropene (cyclopropenes and metal chelating compns. for controlling plant epinasty for)

RN 3100-04-7 USPATFULL

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



L96 ANSWER 79 OF 87 USPATFULL on STN

ACCESSION NUMBER: 2005:299463 USPATFULL

TITLE: Compositions with cyclopropenes and adjuvants

INVENTOR(S): Basel, Richard M., Fostoria, OH, UNITED STATES

Kostansek, Edward Charles, Buckingham, PA, UNITED

STATES

Stevens, Bridget Marie, Horsham, PA, UNITED STATES

NUMBER      KIND      DATE

----- ----- -----

IT 3100-04-7D, 1-Methylcyclopropene, mixts. containing

896132-64-2

(plant growth regulator for non-citrus plants)

RN 3100-04-7 USPATFULL

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

CH<sub>3</sub>

RN 896132-64-2 USPATFULL

CN Phosphonic acid, (2-chloroethyl)-, mixt. with 1-methylcyclopropene (9CI)  
(CA INDEX NAME)

CM 1

CRN 16672-87-0

CMF C<sub>2</sub> H<sub>6</sub> Cl O<sub>3</sub> PClCH<sub>2</sub>—CH<sub>2</sub>—PO<sub>3</sub>H<sub>2</sub>

CM 2

CRN 3100-04-7

CMF C<sub>4</sub> H<sub>6</sub>CH<sub>3</sub>

L96 ANSWER 78 OF 87 USPATFULL on STN

ACCESSION NUMBER: 2005:299464 USPATFULL

TITLE: Compositions with cyclopropenes and metal-complexing agents

INVENTOR(S): Kostansek, Edward Charles, Buckingham, PA, UNITED STATES

Stevens, Bridget Marie, Horsham, PA, UNITED STATES

NUMBER KIND DATE

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PATENT INFORMATION: US 2005261132 A1 20051124

APPLICATION INFO.: US 2005-131615 A1 20050518 (11)

NUMBER DATE

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PRIORITY INFORMATION: US 2004-572742P 20040519 (60)

DOCUMENT TYPE: Utility

FILE SEGMENT: APPLICATION

LEGAL REPRESENTATIVE: ROHM AND HAAS COMPANY, PATENT DEPARTMENT, 100 INDEPENDENCE MALL WEST, PHILADELPHIA, PA, 19106-2399, US

NUMBER OF CLAIMS: 8

fruits with the seed coat fused to the **fruit wall**), including, for example, rice, wheat, corn, oats, barley, and other grains. Among the suitable non-citrus plants that yield indehiscent fruits, some more additional examples are cypselas (small, one-seeded dry fruits with an accessory layer on its **fruit**), including, for example, sunflowers and other members of the daisy family. Among the suitable non-citrus plants that yield indehiscent fruits, some still more examples are samara (small, one-seeded dry fruits with a large wing-like outgrowth), including, for example, ash, elm, and maple. Among the suitable non-citrus plants that yield indehiscent fruits, some yet further examples are nuts (dry fruits with a leathery ovary wall that is partially or fully surrounded by leafy appendages), including, for example, acorn, filbert, and.

DETD Among the suitable non-citrus plants that yield **vegetables**, some examples are those that yield aquatic food plants, such as, for example, watercress, rice, water chestnuts, and other aquatic food plants. Further among the suitable non-citrus plants that yield **vegetables**, some examples are those that yield beans, such as, for example, legumes, garbanzo beans, soybeans, mung beans, runner beans, pole beans, snap beans, and other beans. Also among the suitable non-citrus plants that yield **vegetables**, some examples are those that yield bulb crops such as, for example, garlic, onion, leek, rakkyo, shallot, and other bulb crops. Additionally among the suitable non-citrus plants that yield **vegetables**, some examples are those that yield cole crops, including, for example, broccoli, brussels sprouts, cabbage, cauliflower, bok choy, collards, kale, mustard, radish, rutabaga, rape, turnip, and other cole crops. Still further among the suitable non-citrus plants that yield **vegetables**, some examples are those that yield curcurbits, including, for example, cantaloupe, cucumber, gherkin, gourds, casaba **melon**, honeydew **melon**, pumpkin, squash, watermelon, zucchini, and other curcurbits. Also additionally among the suitable non-citrus plants that yield **vegetables**, some examples are those that yield edible tubers and roots, including, for example, cuscus, ginger, jicama, parsnip, potato, radish, rutabaga, sweet potato, turnip, yam, and other edible tubers and roots. Yet further among the suitable non-citrus plants that yield **vegetables**, some examples are those that yield leafy **vegetables**, such as, for example, cilantro, lettuce, endive, escarole, spinach, dandelion, and other leafy **vegetables**.

DETD Further contemplated as suitable non-citrus plants are those that yield plant parts that are useful for their beauty and/or **ornamental** properties. Such **ornamental** plant parts include, for example, flowers and other **ornamental** plant parts such as, for example, **ornamental** leaves. In some embodiments, an entire **ornamental** plant is considered to be the useful plant part.

DETD . . . herein above and some of which are different from those discussed herein above): increased biomass volume, increased biomass quality, increased **fruit**, increased **fruit** size (when desired), decreased **fruit** size (when desired), harvest timing (advanced or delayed, as desired), decreased cell turgor, decreased russetting, lowered stress response, lowered wounding. . .

DETD Mountain Fresh tomatoes were grown in a green house and sprayed once to run off at the point of first **fruit** set, using Formulation A and Formulation B as defined in Example 1. Plants were subjected to one of the following. . .

IT 3100-04-7D, 1-Methylcyclopropene, mixts. containing  
896132-64-2  
(plant growth regulator for non-citrus plants)

pressure) to which composition (i) has been added. In some embodiments, the concentration of cyclopropene is 0.1 nl/l (i.e., nanoliter per . . . . .

DETD . . . . . embodiments, it is contemplated that the plant being treated will be surrounded by a normal ambient atmosphere (at approximately 1 atmosphere pressure) to which composition (ii) has been added. In some embodiments, the concentration of plant growth regulator that is not a . . . . .

DETD . . . . . may be contacted with one or more plant parts. Plant parts include any part of a plant, including, for example, **flowers**, **buds**, **blooms**, **seeds**, **cuttings**, **roots**, **bulbs**, **fruits**, **vegetables**, **leaves**, and combinations thereof.

DETD . . . . . before the plant blooms may or may not be performed). Independently, in some pre-harvest treatments of a plant that produces **fruits** or **vegetables**, the plant is treated at least once after the **fruit** or **vegetable** sets (additional treatment before the **fruit** or **vegetable** sets may or may not be performed).

DETD . . . . . non-citrus plants include, for example, plants that yield useful plant parts selected from one or more of the following categories: **vegetables**, non-citrus **fruits**, edible (or otherwise useful) leaves, edible (or otherwise useful) sap, **flowers**, roots, seeds, grains, nuts, useful fibers, or any combination thereof. It is recognized that certain useful plant parts are sometimes labeled as belonging to more than one category. For example, some plant parts commonly labeled as "**vegetables**" are also sometimes labeled as "**fruits**." It is also recognized that, within each of the above-listed categories, some commonly-used terms for sub-categories also overlap with each. . . . .

DETD Among the suitable non-citrus plants that yield **fruits**, some examples are those that yield non-citrus fleshy **fruits** and those that yield dry **fruits**. Among the suitable non-citrus plants that yield fleshy **fruits**, some examples are those that yield drupe **fruits** (i.e., fleshy **fruits** with a stony inner layer surrounding one or more seeds), including, for example, **cherry**, **coffee**, **peach**, **coconut**, **almond**, and other fleshy drupe **fruits**. Among the suitable non-citrus plants that yield fleshy **fruits**, some further examples are those that yield non-citrus berry **fruits** (i.e., fleshy **fruits** that have no stony layer), including, for example, **grape**, **tomato**, **watermelon**, **cucumber**, **pumpkin**, **squash**, and other non-citrus berry **fruits**. Among the suitable non-citrus plants that yield fleshy **fruits**, some additional examples are those that yield pome **fruits** (i.e., fleshy **fruits** with a cartilaginous core surrounded by a fleshy accessory layer), including, for example, **apple**, **pear**, **quince**, and other pome **fruits**.

DETD Among the suitable non-citrus plants that yield dry **fruits**, some examples are those that yield dehiscent **fruits** (i.e., dry **fruits** that open naturally to shed seeds), including, for example, **legumes** (such as, for example, **green beans**, **navy beans**, **peas**, **redbuds**, . . . . .

DETD Among the suitable non-citrus plants that yield dry **fruits**, some further examples are those that yield indehiscent **fruits** (i.e., dry **fruits** that do not open naturally to shed seeds). Among the suitable non-citrus plants that yield indehiscent **fruits**, some examples are achenes (small, one-seeded dry **fruits**, with seed coat separate from the **fruit**), including, for example, **strawberries** and other achenes. Among the suitable non-citrus plants that yield indehiscent **fruits**, some further examples are caryopsis **fruits** (small, one-seeded dry



IT 2781-85-3, Cyclopropene  
 (reactant in preparation of cyclopropene derivs. as agents for blocking ethylene response in plants)  
 RN 2781-85-3 USPATFULL  
 CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L96 ANSWER 77 OF 87 USPATFULL on STN  
 ACCESSION NUMBER: 2006:189264 USPATFULL  
 TITLE: Plant growth regulation  
 INVENTOR(S): Basel, Richard M., Fostoria, OH, UNITED STATES  
 Kostansek, Edward Charles, Buckingham, PA, UNITED STATES

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2006160704	A1	20060720
APPLICATION INFO.:	US 2006-324617	A1	20060103 (11)

	NUMBER	DATE
PRIORITY INFORMATION:	US 2005-644348P	20050114 (60)
DOCUMENT TYPE:	Utility	
FILE SEGMENT:	APPLICATION	
LEGAL REPRESENTATIVE:	ROHM AND HAAS COMPANY, PATENT DEPARTMENT, 100 INDEPENDENCE MALL WEST, PHILADELPHIA, PA, 19106-2399, US	
NUMBER OF CLAIMS:	13	
EXEMPLARY CLAIM:	1	
LINE COUNT:	996	

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Provided is a method for treating a plant comprising contacting said plant with at least one composition (i) comprising at least one cyclopropene and contacting said non-citrus plant with at least one composition (ii) comprising at least one plant growth regulator that is not a cyclopropene. Further provided is a liquid composition suitable for treating plants comprising at least one cyclopropene, at least one plant growth regulator that is not a cyclopropene, and one or more further ingredients selected from the group consisting of metal complexing agents, surfactants, hydrocarbon oils, and alcohols.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . solutions containing an abscission agent and 1-methyl cyclopropene were applied to citrus trees, and the treated citrus trees showed low fruit detachment force and showed low levels of leaf abscission. However, treatments other than the specific combination of abscission agent with . . .

DETD . . . it is contemplated that the plant being treated will be surrounded by a normal ambient atmosphere (at approximately 1 atmosphere

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 2005250649	A1	20051110
APPLICATION INFO.:	US 2005-114673	A1	20050426 (11)
	NUMBER	DATE	
PRIORITY INFORMATION:	US 2004-568383P	20040505 (60)	
DOCUMENT TYPE:	Utility		
FILE SEGMENT:	APPLICATION		
LEGAL REPRESENTATIVE:	ROHM AND HAAS COMPANY, PATENT DEPARTMENT, 100 INDEPENDENCE MALL WEST, PHILADELPHIA, PA, 19106-2399, US		
NUMBER OF CLAIMS:	10		
EXEMPLARY CLAIM:	1		
LINE COUNT:	339		
CAS INDEXING IS AVAILABLE FOR THIS PATENT.			
AB	The present invention relates to new delivery systems for cyclopropenes in which compositions comprising the cyclopropene and a molecular encapsulation agent complex further comprise additional components which provide release of the cyclopropene from the molecular encapsulating agent with humid air. The present invention also provides methods to release a cyclopropene from such compositions as well as methods to deliver a cyclopropene compound to a plant to inhibit an ethylene response in the plant.		
CAS INDEXING IS AVAILABLE FOR THIS PATENT.			
SUMM	It is well known that ethylene can cause the premature death of plants or plant parts including, for example, flowers, leaves, fruits, and vegetables through binding with certain receptors in the plant. Ethylene also promotes leaf yellowing and stunted growth as well as premature fruit, flower, and leaf drop. Because of these ethylene-induced problems, very active and intense research presently concerns the investigation of ways to.		
SUMM	. . . the cyclopropene from the complex using no additional water and no gas sparging. This would allow a user to treat flowers, fruits, or vegetables with the cyclopropene gas directly in shipping containers, rather than in a large treatment container, chamber, or room. U.S. Pat.. . .		
SUMM	. . . which the complex can be coated and which does not react with the complex. The coating process may be by pressure or facilitated by heat or solvents. Any coating process known to those skilled in the art may be utilized to. . . protective material. When this sandwich is placed in a humid environment, such as an environment typical for the storage of flowers, fruits, and vegetables, the 1-methylcyclopropene gas is released. Although the delivery systems of this invention may provide slow release of 1-methylcyclopropene, some embodiments. . .		
DETD	92.5 g of lactose was tabletted into approximately 0.275 g flat faced wafers 0.50 inches in diameter using a press pressure of 1800 pounds. Exposure of this tablet to 90% relative humidity in a sealed glass container gave a maximum of. . .		
DETD	92.5 g of lactose was tabletted into approximately 0.275 g flat faced wafers 0.50 inches in diameter using a press pressure of 1800 pounds. Exposure of this tablet to 100% relative humidity in a sealed glass container gave a maximum of. . .		
IT	2781-85-3D, Cyclopropene, derivs., complexes 3100-04-7D, 1-MethylCyclopropene, complex with $\alpha$ -cyclodextrin 10016-20-3D,		

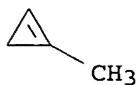
$\alpha$ -Cyclodextrin, complex with 1-methylcyclopropene  
(humidity-activated delivery of encapsulated cyclopropene derivative plant  
growth regulators)

IT 2781-85-3D, Cyclopropene, derivs., complexes 3100-04-7D  
, 1-MethylCyclopropene, complex with  $\alpha$ -cyclodextrin  
(humidity-activated delivery of encapsulated cyclopropene derivative plant  
growth regulators)

RN 2781-85-3 USPATFULL  
CN Cyclopropene (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 3100-04-7 USPATFULL  
CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



L96 ANSWER 81 OF 87 USPATFULL on STN  
ACCESSION NUMBER: 2005:127008 USPATFULL  
TITLE: Formulation for counteracting and ethylene response in  
plants, preparation process thereof, and method using  
the same  
INVENTOR(S): Chang, William T. H., Taipei, TAIWAN, PROVINCE OF CHINA  
Yang, Ren-Der, Shrewsbury, MA, UNITED STATES  
PATENT ASSIGNEE(S): Lytone Enterprise, Inc., Taipei, TAIWAN, PROVINCE OF  
CHINA (non-U.S. corporation)

	NUMBER	KIND	DATE
PATENT INFORMATION:	US 6897185	B1	20050524
	WO 2002024171		20020328
APPLICATION INFO.:	US 2002-182403		20000922 (10)
	WO 2000-US25979		20000922
			20020730 PCT 371 date

DOCUMENT TYPE: Utility  
FILE SEGMENT: GRANTED  
PRIMARY EXAMINER: Clardy, S. Mark  
LEGAL REPRESENTATIVE: Burns, Doane, Swecker & Mathis, L.L.P.  
NUMBER OF CLAIMS: 15  
EXEMPLARY CLAIM: 1  
NUMBER OF DRAWINGS: 0 Drawing Figure(s); 0 Drawing Page(s)  
LINE COUNT: 351  
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AB Disclosed is a tablet dosage for inhibiting ethylene response in a plant containing a blocking agent, which has ethylene binding site inhibition activity to plants, and an effervescent ingredient in admixture with one or more acceptable excipients. A process of preparing the tablet dosage and a method for inhibiting ethylene response in plants are also disclosed therein.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

SUMM . . . aspects of plant growth, development, and senescence. The most

214154-17-3

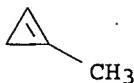
RL: AGR (Agricultural use); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (method for obtaining powder preps. containing 1-methylcyclopropene adsorbed on pretreated sorbents for post-harvest treatment of agricultural crops)

IT 3100-04-7, 1-Methylcyclopropene

RL: AGR (Agricultural use); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (method for obtaining powder preps. containing 1-methylcyclopropene adsorbed on pretreated sorbents for post-harvest treatment of agricultural crops)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



L96 ANSWER 5 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:380547 HCPLUS

DOCUMENT NUMBER: 144:389561

TITLE: Apples packed with modified-  
 atmosphere packaging materials and storage of  
 the packaged apples at low temperature

INVENTOR(S): Tanaka, Atsushi

PATENT ASSIGNEE(S): Sumitomo Bakelite Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2006109765	A2	20060427	JP 2004-300958	20041015
PRIORITY APPLN. INFO.:			JP 2004-300958	20041015

AB Apples are packaged with a bag which shows O permeability 50-300 cc/100 g apple.atm and CO<sub>2</sub> permeability 70-650 cc/100 g apple.atm, wherein O concentration and CO<sub>2</sub> concentration in the bag before opening are 1.8-15% and 3-10%, resp. The packaged apples are stored at 0-10°. This method prevents flesh softening, reduction in sourness, browning of inside, and off-odor generation during storage of apples. Thus, two apples were packed in a LLDPE bag having 7 pores (opening area 3.85 + 10<sup>-3</sup> mm<sup>2</sup>/pore) to control O and CO<sub>2</sub> permeability 105 and 475 cc/100 g/day/atm, resp., and stored at 5° for 60 days to maintain freshness.

CC 17-4 (Food and Feed Chemistry)

ST apple storage modified atm packaging  
 material; LLDPE bag oxygen carbon dioxide permeability control  
 apple packaging

IT Atmosphere (earth)

(modified; storage of apples by modified-  
 atmospheric packaging)

IT Bags

(plastic; storage of apples by modified-atm  
packaging)

IT Food packaging  
Food packaging materials  
Food preservation  
Malus pumila  
(storage of apples by modified-atmospheric  
packaging)

IT Linear low density polyethylenes  
Polyamides, biological studies  
Polyesters, biological studies  
RL: FFD (Food or feed use); TEM (Technical or engineered material use);  
BIOL (Biological study); USES (Uses)  
(storage of apples by modified-atmospheric  
packaging)

IT 74-85-1D, Ethene, polymers with  $\alpha$ -olefins  
RL: FFD (Food or feed use); TEM (Technical or engineered material use);  
BIOL (Biological study); USES (Uses)  
(LLDPE; storage of apples by modified-atm  
packaging)

IT 74-85-1, Ethylene, processes  
RL: REM (Removal or disposal); PROC (Process)  
(adsorbents or decomposing agents; storage of apples by  
modified-atmospheric packaging)

IT 25777-14-4 26100-51-6, Poly(lactic acid)  
RL: FFD (Food or feed use); TEM (Technical or engineered material use);  
BIOL (Biological study); USES (Uses)  
(assumed monomers; storage of apples by modified-  
atmospheric packaging)

IT 3100-04-7, 1-Methylcyclopropene  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(ethylene inhibitor; storage of apples by modified-  
atmospheric packaging)

IT 124-38-9, Carbon dioxide, biological studies 7782-44-7, Oxygen,  
biological studies  
RL: BSU (Biological study, unclassified); BIOL (Biological study)  
(storage of apples by modified-atmospheric  
packaging)

IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene 25038-59-9,  
biological studies 26023-30-3, Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)]  
26247-20-1, Poly(butylene succinate)  
RL: FFD (Food or feed use); TEM (Technical or engineered material use);  
BIOL (Biological study); USES (Uses)  
(storage of apples by modified-atmospheric  
packaging)

IT 3100-04-7, 1-Methylcyclopropene  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(ethylene inhibitor; storage of apples by modified-  
atmospheric packaging)

RN 3100-04-7 HCPLUS  
CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



ACCESSION NUMBER: 2006:740684 HCPLUS  
 DOCUMENT NUMBER: 145:187434  
 TITLE: Preservation method of Myrica rubra  
 INVENTOR(S): Li, Jianrong; Wang, Xiangyang  
 PATENT ASSIGNEE(S): Zhejiang Gongshang University, Peop. Rep. China  
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 8 pp.  
 CODEN: CNXXEV  
 DOCUMENT TYPE: Patent  
 LANGUAGE: Chinese  
 FAMILY ACC. NUM. COUNT: 1  
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1806573	A	20060726	CN 2006-10049363	20060126
PRIORITY APPLN. INFO.:			CN 2006-10049363	20060126

AB The title method comprises applying calcium fertilizer and mulch film before picking Myrica rubra, spraying fungistatic agent and calcium agent on Myrica rubra, putting in small box with pad for removing moisture, and storing in modified atmospheric comprising CO<sub>2</sub> 2% and O<sub>2</sub> 4% (optionally with addition of 0.1% 1-methylcyclopropene as ethylene inhibitor) under 0-2°C. The fungistatic agent is natamycin 30-100 ppm, or mixture of natamycin 30-100 ppm and sec-butylamine 100-300 ppm and/or 0.05-0.1% citric acid. The calcium agent is the mixture of 0.5-1.5% CaCl<sub>2</sub> and 0.5-1.5% pectin. With this method, Myrica rubra can be stored for over 16 days with healthy fruit rate over 90%.

CC 17-4 (Food and Feed Chemistry)

ST food preservation Myrica

IT Food preservation

Myrica rubra

(preservation method of Myrica rubra)

IT Coating process

(spray; preservation method of Myrica rubra)

IT 471-34-1, Calcium carbonate, biological studies 10103-46-5, Calcium phosphate

RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (preservation method of Myrica rubra)

IT 77-92-9, Citric acid, biological studies 124-38-9, Carbon dioxide, biological studies 3100-04-7, 1-Methylcyclopropene 7681-93-8, Natamycin 7782-44-7, Oxygen, biological studies 9000-69-5, Pectin 10043-52-4, Calcium chloride, biological studies 13952-84-6, sec-Butylamine

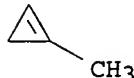
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (preservation method of Myrica rubra)

IT 3100-04-7, 1-Methylcyclopropene

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (preservation method of Myrica rubra)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



TITLE: Influence of Ethylene Action, Storage Atmosphere, and Storage Duration on Diphenylamine and Diphenylamine Derivative Content of Granny Smith Apple Peel  
 AUTHOR(S): Rudell, David R.; Mattheis, James P.; Fellman, John K.  
 CORPORATE SOURCE: Tree Fruit Research Laboratory, Agricultural Research Service, U.S. Department of Agriculture, Wenatchee, WA, 98801, USA  
 SOURCE: Journal of Agricultural and Food Chemistry (2006), 54 (6), 2365-2371  
 CODEN: JAFCAU; ISSN: 0021-8561  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The application of diphenylamine (DPA) to prevent the **apple** **peel** disorder superficial scald can result in accumulation of a number of DPA derivs. resulting from C-nitration, C-hydroxylation, O-methylation, and N-nitrosation during **fruit** storage. As the presence of these compds. may be indicative of metabolic processes leading to superficial scald development, the contents of DPA and DPA derivs. were determined in fruits treated at harvest with DPA or DPA plus the ethylene action inhibitor 1-methylcyclopropene (1-MCP), which also prevents scald development. Influences of **fruit** maturity, storage environment, storage duration, and a 14 day poststorage **ripening** period on accumulation of DPA metabolites were also assessed. Poststorage **ripening**, 1-MCP treatment, and controlled **atmospheric** storage had varied effects on DPA derivative contents suggesting that reactive oxygen and nitrogen species, such as  $\bullet\text{OH}$ ,  $\bullet\text{NO}$ , and  $\bullet\text{NO}_2$ , or enzyme-catalyzed reactions may be present during certain **ripening** and senescence-related physiol. processes. Definitive correlations between superficial scald incidence and contents of specific derivs. were not observed

CC 17-10 (Food and Feed Chemistry)

ST diphenylamine methylcyclopropene **fruit** **ripening**  
ethylene **apple**

IT Malus pumila

(Granny Smith; diphenylamine and 1-methylcyclopropene effect on **fruit** **ripening** of **Granny Smith** **apple** during modified **atmospheric** storage)

IT Food packaging

(diphenylamine and 1-methylcyclopropene effect on **fruit** **ripening** of **Granny Smith** **apple** during modified **atmospheric** storage)

IT Growth and development, plant

(**fruit** **ripening**; diphenylamine and 1-methylcyclopropene effect on **fruit** **ripening** of **Granny Smith** **apple** during modified **atmospheric** storage)

IT Atmosphere (environmental)

(modified; diphenylamine and 1-methylcyclopropene effect on **fruit** **ripening** of **Granny Smith** **apple** during modified **atmospheric** storage)

IT 74-85-1, Ethylene, biological studies 86-30-6, N-Nitroso-diphenylamine 122-37-2, 4-Hydroxy-diphenylamine 1208-86-2, 4-Methoxy-diphenylamine

RL: BSU (Biological study, unclassified); BIOL (Biological study)

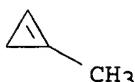
(diphenylamine and 1-methylcyclopropene effect on **fruit** **ripening** of **Granny Smith** **apple** during modified **atmospheric** storage)

IT 122-39-4, Diphenylamine, biological studies 3100-04-7, 1-Methylcyclopropene

RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
; BIOL (Biological study); USES (Uses)  
(diphenylamine and 1-methylcyclopropene effect on fruit  
ripening of Granny Smith apple during  
modified atmospheric storage)

IT 3100-04-7, 1-Methylcyclopropene  
RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
; BIOL (Biological study); USES (Uses)  
(diphenylamine and 1-methylcyclopropene effect on fruit  
ripening of Granny Smith apple during  
modified atmospheric storage)

RN 3100-04-7 HCPLUS  
CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

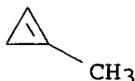
L96 ANSWER 8 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
ACCESSION NUMBER: 2006:181354 HCPLUS  
TITLE: Responses of 1-MCP application in plums stored under air and controlled atmospheres  
AUTHOR(S): Menniti, A. M.; Donati, I.; Gregori, R.  
CORPORATE SOURCE: CRIOF-DIPROVAL, Alma Mater Studiorum, University of Bologna, Bologna, 46-40127, Italy  
SOURCE: Postharvest Biology and Technology (2006), 39(3), 243-246  
CODEN: PBTEED; ISSN: 0925-5214  
PUBLISHER: Elsevier Ltd.  
DOCUMENT TYPE: Journal  
LANGUAGE: English  
AB The potential of 1-MCP for controlling ripening in 'Angeleno' plum fruit under air and controlled atmospheric (CA) storage was explored, and the possibility that 1-MCP can inhibit development of brown rot caused by *Monilinia laxa* and internal breakdown in 'Fortune' and 'Angeleno' plums tested. After harvest, fruit were exposed to 300 and 500 nl l-1 (in 2003) and 500 nl l-1 1-MCP (in 2004) at low temps. (0-3°C) for 24 h. After treatment the plums were stored in air at 0°C and 'Angeleno' fruit were also stored in CA storage (1.8% O<sub>2</sub> + 2.5% CO<sub>2</sub>). Following storage, fruit were kept at 20°C. In 'Angeleno' fruit, 1-MCP was effective in delaying the loss of firmness and color changes during holding at 20°C. 1-MCP reduced brown rot in fruit stored in CA but no significant reduction was found in air storage. Internal breakdown, a major physiol. storage disorder in plums, was inhibited by 1-MCP treatment. Furthermore, since 1-MCP applied in air storage showed better results than the control in CA conditions, an application of 1-MCP before air storage could be the best way to reduce the ripening process for short or medium storage periods (40 and 60 days). CA storage plus 1-MCP treatment could be used for long periods (80 days).  
CC 17 (Food and Feed Chemistry)  
ST methylcyclopropene plum firmness color air controlled atm storage  
IT INDEXING IN PROGRESS

IT Color  
 Controlled atmospheres  
 Decay (biological)  
 Food preservation  
 Food texture  
*Prunus domestica*  
 Storage  
 (responses of 1-MCP application in plums stored under air and controlled atmospheres)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (responses of 1-MCP application in plums stored under air and controlled atmospheres)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (responses of 1-MCP application in plums stored under air and controlled atmospheres)

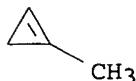
RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 9 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2006:64646 HCPLUS  
 TITLE: Effect of atmospheric modification  
 , 1-MCP and chemicals on quality of fresh-cut banana  
 Vilas-Boas, Eduardo V. de B.; Kader, Adel A.  
 AUTHOR(S):  
 CORPORATE SOURCE: Departamento de Ciencia dos Alimentos, Universidade  
 Federal de Lavras, Lavras, Minas Gerais, 37200-000,  
 Brazil  
 SOURCE: Postharvest Biology and Technology (2006), 39(2),  
 155-162  
 CODEN: PBTEED; ISSN: 0925-5214  
 PUBLISHER: Elsevier Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Fresh-cut banana slices have a short shelf-life due to fast browning and softening after processing. The effects of atmospheric modification, exposure to 1-MCP, and chemical dips on the quality of fresh-cut bananas were determined. Low levels of O<sub>2</sub> (2 and 4 kPa) and high levels of CO<sub>2</sub> (5 and 10 kPa), alone or in combination, did not prevent browning and softening of fresh-cut banana slices. Softening and respiration rates were decreased in response to 1-MCP treatment (1 μL L<sup>-1</sup> for 6 h at 14 °C) of fresh-cut banana slices (after processing), but their ethylene production and browning rates were not influenced. A 2-min dip in a mixture of 1% (w/v) CaCl<sub>2</sub> + 1% (w/v) ascorbic acid + 0.5% (w/v) cysteine effectively prevented browning and softening of the slices for 6 days at 5 °C. Dips in less than 0.5% cysteine promoted pinking of fresh-cut banana slices, while concns. between 0.5 and 1.0% cysteine delayed browning and softening and extended the post-cutting life to 7 days at 5 °C.  
 CC 17 (Food and Feed Chemistry)  
 ST banana methylcyclopropene atm modification browning

firmness  
 IT INDEXING IN PROGRESS  
 IT Controlled atmospheres  
 Food preservation  
 Food texture  
 Musa  
 Respiration, plant  
 (effect of atmospheric modification, 1-methylcyclopropene  
 and chems. on quality of fresh-cut banana)  
 IT Browning (food)  
 (enzymic; effect of atmospheric modification,  
 1-methylcyclopropene and chems. on quality of fresh-cut banana)  
 IT 10043-52-4, Calcium chloride  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (effect of atmospheric modification, 1-methylcyclopropene  
 and chems. calcium chloride, ascorbic acid, and cysteine on quality of  
 fresh-cut banana)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (effect of atmospheric modification, 1-methylcyclopropene  
 and chems. on quality of fresh-cut banana)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (effect of atmospheric modification, 1-methylcyclopropene  
 and chems. on quality of fresh-cut banana)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 10 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1197905 HCPLUS  
 DOCUMENT NUMBER: 144:87184  
 TITLE: Influence of 1-methylcyclopropene and storage atmosphere on changes in volatile compounds and fruit quality of conference pears  
 AUTHOR(S): Rizzolo, Anna; Cambiaghi, Paola; Grassi, Maurizio;  
 Zerbini, Paola Eccher  
 CORPORATE SOURCE: C.R.A. - I.V.T.P.A. - Consiglio per la Ricerca e la Sperimentazione in Agricoltura, Istituto Sperimentale per la Valorizzazione Tecnologica dei Prodotti Agricoli, Milan, 20133, Italy  
 SOURCE: Journal of Agricultural and Food Chemistry (2005), 53(25), 9781-9789  
 CODEN: JAFCAU; ISSN: 0021-8561  
 PUBLISHER: American Chemical Society  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Conference pears (*Pyrus communis* L.) were treated with 25 and 50 nL L-1 1-methylcyclopropene (1-MCP) at -0.5° for 24 h, then stored for up to 22 wk in air (NA) and controlled atmospheric (CA). After 7 and 14 wk of storage, fruits were retreated with 1-MCP. After

7, 14, and 22 wk of storage, fruits were kept for up to 7 days at 20° in air for poststorage ripening. The effects of 1-MCP treatment declined with duration of storage in both storage atmospheres, indicating that retreatments had little addnl. effects on subsequent ripening. Ethylene production was lower and firmness was higher in 50 nL L-1 fruits, while the 25 nL L-1 dose was not very different from the control. Development of superficial scald was not prevented by 1-MCP treatments, but the severity of the symptoms was influenced. The 1-MCP effects were perceivable on texture (juiciness) and flavor. Control fruit and 25 nL L-1 fruit reached their best sensory quality after 14 wk of storage, while 50 nL L-1 fruit reached the same sensory quality later, keeping a fresh flavor when the quality of control fruit declined and became watery or grainy. The fresh flavor in 50 nL L-1 fruit was probably due to the presence below the odor detection threshold concns. of the volatile compds. responsible for the "ripe pear" aroma, mainly of butanol and Et butanoate. CA prolonged or enhanced the effects of 1-MCP; 1-MCP cannot substitute for CA but can reinforce the CA effects.

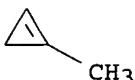
CC 17-10 (Food and Feed Chemistry)  
 ST Conference pear methylcyclopropene storage atm ethylene flavor  
 IT Atmosphere (environmental)  
     Decay (biological)  
     Disease, plant  
     Flavor  
     Food texture  
     Pyrus communis  
         (1-methylcyclopropene and storage atmospheric influence on changes in volatile compds. and fruit quality of conference pears)  
 IT Alcohols, biological studies  
     Aldehydes, biological studies  
     Ketones, biological studies  
     RL: BSU (Biological study, unclassified); BIOL (Biological study)  
         (1-methylcyclopropene and storage atmospheric influence on changes in volatile compds. and fruit quality of conference pears)  
 IT Alkenes, biological studies  
     RL: BSU (Biological study, unclassified); BIOL (Biological study)  
         (alkatrienes; 1-methylcyclopropene and storage atmospheric influence on changes in volatile compds. and fruit quality of conference pears)  
 IT Growth and development, plant  
     (fruit ripening; 1-methylcyclopropene and storage atmospheric influence on changes in volatile compds. and fruit quality of conference pears)  
 IT 64-17-5, Ethanol, biological studies 66-25-1, Hexanal 67-64-1, Acetone, biological studies 71-23-8, Propanol, biological studies 71-36-3, Butanol, biological studies 71-41-0, Pentanol, biological studies 74-85-1, Ethylene, biological studies 75-07-0, Acetaldehyde, biological studies 78-83-1, biological studies 78-93-3, Methyl ethyl ketone, biological studies 79-20-9, Methyl acetate 105-54-4, Ethyl butanoate 109-21-7, Butyl butanoate 109-60-4, Propyl acetate 110-19-0, 2-Methylpropyl acetate 111-27-3, Hexanol, biological studies 123-38-6, Propanal, biological studies 123-86-4, Butyl acetate 141-78-6, Ethyl acetate, biological studies 142-92-7, Hexyl acetate 502-61-4,  $\alpha$ -Farnesene 590-01-2, Butyl propanoate 628-63-7, Pentyl acetate 6728-26-3, (E)-2-Hexenal 27625-35-0, 3-Methylbutyl 2-methylbutanoate

RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (1-methylcyclopropene and storage **atmospheric influence** on changes  
 in volatile compds. and **fruit quality** of conference  
 pears)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (1-methylcyclopropene and storage **atmospheric influence** on changes  
 in volatile compds. and **fruit quality** of conference  
 pears)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (1-methylcyclopropene and storage **atmospheric influence** on changes  
 in volatile compds. and **fruit quality** of conference  
 pears)

RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

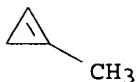


REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 11 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1119180 HCPLUS  
 TITLE: Postharvest use of 1-MCP to extent storage life of melon in Brazil- Current research status  
 AUTHOR(S): Alves, R. E.; Filgueiras, H. A. C.; Almeida, A. S.; Machado, F. L. C.; Bastos, M. S. R.; Lima, M. A. C.; Terao, D.; Silva, E. O.; Santos, E. C.; Pereira, M. E. C.; Miranda, M. R. A.  
 CORPORATE SOURCE: Planalto Pici, Embrapa Agroindustria Tropical, Fortaleza, CE, Brazil  
 SOURCE: Acta Horticulturae (2005), 682 (Proceedings of the 5th International Postharvest Symposium, 2004, Volume 3), 2233-2237  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Efficiency of 1-MCP on postharvest life of whole and fresh-cut cantaloupe melons was evaluated. Melons were treated with doses varying from 0 to 900 nl.L-1 in order to define the best concentration of 1-MCP.  
 1-MCP. Flesh softening was the main characteristic affected in all expts. and softening delay was according to the dose, although differences between doses above 300 nl.L-1 were not significant. Respiration and ethylene evolution rates were reduced and both CO<sub>2</sub> and ethylene peaks were delayed in trials with whole melons. 1-MCP doubled postharvest life of cantaloupe melons at ambient temperature (from 1 to 2 wk). Treated melons were acceptable for 27 days, whereas control fruit could be stored for no longer than 7 days. Although shelf life of fresh-cut cantaloupe melons defined by firmness and appearance was approx. 20 days for all treatments, food safety aspects limited it to 12 days. Treated 'Galia' melons were firmer than the control fruit for up to 30 days, despite the storage **atmospheric**, and fruit were acceptable for up to 27 days. Postharvest life of

'Charantais' melons stored for 15 days at room temperature (25±3°C and 65±5% RH) and submitted to postharvest treatment with different concns. of 1-MCP maintained better overall external appearance than the control. 1-MCP postharvest treatment on 'Orange Flesh' melons delayed fruit ripening and controlled decay (*F. pallidoroseum*) incidence.

CC 17 (Food and Feed Chemistry)  
 ST melon methylcyclopropene postharvest storage life  
 IT INDEXING IN PROGRESS  
 IT Food texture  
     (firmness; postharvest use of 1-methylcyclopropene to extent storage life of melon in Brazil)  
 IT Cucumis melo  
     Food preservation  
     Respiration, plant  
     Storage  
     (postharvest use of 1-methylcyclopropene to extent storage life of melon in Brazil)  
 IT 124-38-9, Carbon dioxide  
     RL: BSU (Biological study, unclassified); BIOL (Biological study)  
     (effect of postharvest use of 1-methylcyclopropene on ethylene and carbon dioxide production and storage life of melon in Brazil)  
 IT 74-85-1, Ethylene  
     RL: BSU (Biological study, unclassified); BIOL (Biological study)  
     (effect of postharvest use of 1-methylcyclopropene on ethylene production and storage life of melon in Brazil)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
     (postharvest use of 1-methylcyclopropene to extent storage life of melon in Brazil)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
     (postharvest use of 1-methylcyclopropene to extent storage life of melon in Brazil)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 12 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2006:19322 HCPLUS  
 TITLE: Effect of delays between harvest and 1-methylcyclopropene treatment, and temperature during treatment, on ripening of air-stored and controlled-atmosphere-stored apples  
 AUTHOR(S): Watkins, Christopher B.; Nock, Jacqueline F.  
 CORPORATE SOURCE: Department of Horticulture, Cornell University, Ithaca, NY, 14853, USA  
 SOURCE: HortScience (2005), 40(7), 2096-2101  
 CODEN: HJHSAR; ISSN: 0018-5345  
 PUBLISHER: American Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The effects of temperature during 1-MCP treatment, and the effects of delays of up to 8 d after harvest before treatment, have been investigated using 'Cortland', 'Delicious', 'Jonagold', and 'Empire' (normal and late harvest) apple [(*Malus sylvestris* (L.) Mill. var. *domestica* (Borkh.) Mansf.) cultivars stored in air for 2 and 4 mo and in controlled atmospheric (CA) storage for 4 and 8 mo. Fruit were treated with 1  $\mu$ L·L<sup>-1</sup> 1-MCP for 24 h on the day of harvest (warm) or after 1,2,3,4,6, or 8 days at cold storage temps. CA storage was established by day 10. Little effect of temperature during treatment (warm fruit on the day of harvest compared with cold fruit after 24 h of cooling) was detected. Major interactions among cultivars, handling protocols before 1-MCP treatment, storage type and length of storage were observed. Delays of up to 8 days before 1-MCP treatment either did not affect efficacy of treatment, or markedly reduced it, depending on cultivar, storage type and length of storage. The results indicate that, depending on cultivar, the importance of minimizing the treatment delay increases as storage periods increase.

CC 17 (Food and Feed Chemistry)

ST methylcyclopropene temp fruit ripening storage

apple

IT INDEXING IN PROGRESS

IT Temperature effects, biological  
(MD biol. LT cold; effect of delays between harvest and 1-methylcyclopropene treatment, and temperature during treatment on apple ripening)

IT Fruit  
(apple; effect of delays between harvest and 1-methylcyclopropene treatment, and temperature during treatment on apple ripening)

IT Atmosphere (environmental)  
(controlled; effect of delays between harvest and 1-methylcyclopropene treatment, and temperature during treatment on apple ripening)

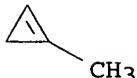
IT Storage  
Time  
(effect of delays between harvest and 1-methylcyclopropene treatment, and temperature during treatment on apple ripening)

IT 3100-04-7, 1-Methylcyclopropene  
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)  
(effect of delays between harvest and 1-methylcyclopropene treatment, and temperature during treatment on apple ripening)

IT 3100-04-7, 1-Methylcyclopropene  
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)  
(effect of delays between harvest and 1-methylcyclopropene treatment, and temperature during treatment on apple ripening)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

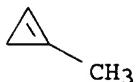
L96 ANSWER 13 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1119133 HCPLUS  
 TITLE: The effect of 1-methylcyclopropene on the storage potential of UK cultivar plum (*Prunus domestica*)  
 AUTHOR(S): Tully, M. S.; Hanney, S. J.; Bishop, C. F. H.  
 CORPORATE SOURCE: Chelmsford, Essex, CM2 9PH, UK  
 SOURCE: *Acta Horticulturae* (2005), 682 (Proceedings of the 5th International Postharvest Symposium, 2004, Volume 3), 1579-1584  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB 'Victoria' plums were harvested at com. maturity on one date, from two different agri-climatic areas, with 'Marjorie' plums harvested from one location at a later date. Samples of the fruit were treated with 1-Methylcyclopropene (1-MCP; Smartfresh) within 12 h of harvest, prior to storage in air. The 1-MCP was applied at 650 nL L<sup>-1</sup> for 24 h at between 5 and 7°C. After treatment all fruit was stored in air at 1°C. Fruit was removed from the cold store at 7 day intervals, with each sample having a further subsample transferred to 20°C for 7 days shelf life. The fruit quality was evaluated in the following ways; colorimeter (Minolta a\* and Hue reading), the presence of decay, fruit flesh pressures and soluble sugars. For both cultivars the most notable effect of 1-MCP was the improved firmness of fruit both from cold storage and after 7 days at 20°C. The agri-climate region had an effect on the fruit pressure in 'Victoria', with a 7 day benefit over the untreated sample for the firmness to drop below 4 kg cm<sup>-2</sup>. The firmness for 'Marjorie' was around 3.5 kg cm<sup>-2</sup> at harvest, with the 1-MCP treatment sample maintaining this firmness, only falling below 3.5 after 35 days, the untreated control fell below this figure after 21 days.

CC 17 (Food and Feed Chemistry)  
 ST *Prunus methylcyclopropene storage fruit quality firmness*  
 IT INDEXING IN PROGRESS  
 IT Temperature effects, biological  
     (MD biol. LT cold; effect of 1-methylcyclopropene on storage potential of UK cultivar plum)  
 IT Color  
     *Prunus domestica*  
     Storage  
       (effect of 1-methylcyclopropene on storage potential of UK cultivar plum)  
 IT Carbohydrates  
     RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)  
       (effect of 1-methylcyclopropene on storage potential of UK cultivar plum)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
       (effect of 1-methylcyclopropene on storage potential of UK cultivar plum)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
       (effect of 1-methylcyclopropene on storage potential of UK cultivar plum)  
 RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 14 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1119128 HCAPLUS  
 TITLE: **Fruit** fluorescence response to low oxygen stress: modern storage technologies compared to 1-MCP treatment of **apple**  
 AUTHOR(S): Zanella, A.; Cazzanelli, P.; Panarese, A.; Coser, M.; Cecchinelli, M.; Rossi, O.  
 CORPORATE SOURCE: Agricultural Research Centre Laimburg, Ora, 39040, Italy  
 SOURCE: Acta Horticulturae (2005), 682 (Proceedings of the 5th International Postharvest Symposium, 2004, Volume 3), 1535-1542  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB A non-destructive monitoring system that assesses low-oxygen stress of chlorophyll-containing fruit (HarvestWatch; Satlantic Inc., Halifax, N.S., Canada) was applied during storage. It allows for the changing of the **atmospheric** composition in the CA-room dynamically to the actual physiol. state of the **fruit** (DCA), in contrast to the usually static conditions of CA storage. A decrease of the oxygen concentration to the lowest levels tolerated by the **fruit** should optimize the greatest benefits of ultra low oxygen (ULO) storage without risking losses caused by anaerobic conditions. The monitoring system is based on the measurement of chlorophyll fluorescence by means of FIRM (fluorescence interactive response monitor, Satlantic Inc.) sensors on samples of six apples. Below the **fruit** specific oxygen-threshold, the theor. estimate of F0 at zero irradiance, F $\alpha$  increases. The oxygen concentration of the controlled **atmospheric** was set slightly above the tolerance level of the **fruit** as determined by the rise of F $\alpha$ . The effects of DCA on the control of superficial scald and on quality preservation of **apple** fruit cv. 'Granny Smith' were compared with those of 1-MCP and diphenylamine (DPA) postharvest treatments. Optimal recommended CA conditions were used as a reference. The delay of quality loss was determined by means of internal quality, taste panel preference and incidence of physiol. disorders, such as superficial scald, core flush and anaerobic breakdown. Results of the scaling to com. dimensions in a 150 t room are also given. According to the **fruit**'s fluorescence response to low oxygen stress, O2 was set at 0.4 kPa plus 1.3 kPa CO2. After 6 mo of storage followed by 7 or 14 days of ripening at 20°C, the occurrence of superficial scald was completely absent and no signs of low oxygen disorders could be seen on 23 different batches of **fruit**. Moreover taste was not influenced by off-flavors. Firmness was maintained at levels comparable to 1-MCP treatment. However the efficacy of 1-MCP in totally controlling scald, reducing core flush and delaying ripening could be confirmed even during shelf life conditions.

CC 17 (Food and Feed Chemistry)

ST Malus fruit fluorescence low oxygen stress methyl cyclopropene storage

IT INDEXING IN PROGRESS

IT Controlled atmospheres

Fluorescence

Food preservation

Malus pumila

Storage

Taste

(fruit fluorescence response to low oxygen stress and modern storage technologies compared to 1-methylcyclopropene treatment of apple)

IT Chlorophylls

RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)

(fruit fluorescence response to low oxygen stress and modern storage technologies compared to 1-methylcyclopropene treatment of apple)

IT Stress, plant

(low-oxygen; fruit fluorescence response to low oxygen stress and modern storage technologies compared to 1-methylcyclopropene treatment of apple)

IT 124-38-9, Carbon dioxide

RL: ANT (Analyte); BSU (Biological study, unclassified); ANST (Analytical study); BIOL (Biological study)

(fruit fluorescence response to low oxygen stress and modern storage technologies compared to 1-methylcyclopropene treatment of apple)

IT 3100-04-7, 1-Methylcyclopropene

RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(fruit fluorescence response to low oxygen stress and modern storage technologies compared to 1-methylcyclopropene treatment of apple)

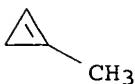
IT 3100-04-7, 1-Methylcyclopropene

RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(fruit fluorescence response to low oxygen stress and modern storage technologies compared to 1-methylcyclopropene treatment of apple)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 15 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:865192 HCPLUS

DOCUMENT NUMBER: 144:68958

TITLE: Response of four apple cultivars to 1-methylcyclopropene treatment and controlled atmosphere storage

AUTHOR(S): Bai, Jinhe; Baldwin, Elizabeth A.; Goodner, Kevin L.; Mattheis, James P.; Brecht, Jeffrey K.

CORPORATE SOURCE: Mid-Columbia Agricultural Research and Extension Center, Oregon State University, Hood River, OR, 97031, USA

SOURCE: HortScience (2005), 40(5), 1534-1538

CODEN: HJHSAR; ISSN: 0018-5345

PUBLISHER: American Society for Horticultural Science

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Apples [Malus sylvestris (L.) Mill var. domestica (Borkh.) Mansf. ('Gala', 'Delicious', 'Granny Smith' and 'Fuji')], pretreated or nontreated with 1-methylcyclopropene (1-MCP, 0.6 to 1.0  $\mu\text{L}\cdot\text{L}^{-1}$  for 18 h at 20°C), were stored in controlled atmospheric (CA, 1 to 1.5 kPa O<sub>2</sub>; 1 to 2 kPa CO<sub>2</sub>) or in regular atmospheric (RA) for up to 8 mo at 1°C. Firmness, titratable acidity (TA), soluble solids content (SSC), and volatile abundance were analyzed every month directly or after transfer to air at 20°C for 1 wk to determine effect of 1-MCP, storage atmospheric and storage time on apple quality immediately after cold storage and after simulated marketing conditions at 20°C. The 1-MCP  $\pm$  CA treatments delayed ripening and prolonged storage life as indicated by delayed loss of firmness and TA in all four cultivars during storage. The 1-MCP  $\pm$  CA also slightly delayed loss of SSC for 'Gala' but had no effect on SSC levels for the other cultivars. There were differences among treatments for firmness and TA content [(1-MCP + RA) > CA] for 'Gala', 'Delicious', and 'Granny Smith' apples, but not for 'Fuji'. These differences were generally exacerbated after transfer of fruit to 20°C for 1 wk. A combination of 1-MCP + CA was generally best [(1-MCP + CA) > (1-MCP + RA) or CA] for maintaining 'Delicious' firmness and TA. However, the treatments that were most effective at retaining TA and firmness also retained the least volatiles. The results indicate that the efficacy of 1-MCP and CA in maintaining apple quality factors is cultivar dependent and that 1-MCP + RA may be a viable alternative to CA for optimal eating quality for some cultivars.

CC 17-10 (Food and Feed Chemistry)

ST methylcyclopropene controlled atm apple flavor texture

IT Acidity

Flavor

(1-methylcyclopropene and controlled atmospheric storage effect on apple cultivars)

IT Malus pumila

(Fuji; 1-methylcyclopropene and controlled atmospheric storage effect on apple cultivars)

IT Malus pumila

(Gala, Delicious; 1-methylcyclopropene and controlled atmospheric storage effect on apple cultivars)

IT Malus pumila

(Granny Smith; 1-methylcyclopropene and controlled atmospheric storage effect on apple cultivars)

IT Atmosphere (environmental)

(controlled; 1-methylcyclopropene and controlled atmospheric storage effect on apple cultivars)

IT Food texture

(firmness; 1-methylcyclopropene and controlled atmospheric storage effect on apple cultivars)

IT 124-38-9, Carbon dioxide, biological studies 3100-04-7,

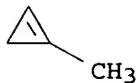
1-Methylcyclopropene

RL: BSU (Biological study, unclassified); FFD (Food or feed use)

; BIOL (Biological study); USES (Uses)

(1-methylcyclopropene and controlled atmospheric storage effect on apple cultivars)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
 ; BIOL (Biological study); USES (Uses)  
 (1-methylcyclopropene and controlled atmospheric storage effect on  
 apple cultivars)  
 RN 3100-04-7 HCAPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 33 THERE ARE 33 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 16 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1110441 HCAPLUS  
 DOCUMENT NUMBER: 145:144289  
 TITLE: Effects of 1-MCP treatments on fruit quality and storability of different pear varieties  
 Lafer, G.  
 AUTHOR(S):  
 CORPORATE SOURCE: Haidegg Research Centre for Fruit Growing and  
 Viticulture, Graz, Austria  
 SOURCE: Acta Horticulturae (2005), 682(Proceedings of the 5th  
 International Postharvest Symposium, 2004, Volume 2),  
 1227-1231  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB The effects of 1-MCP treatments on 'Williams', 'Bosc' and 'Packhams  
 Triumph' pears (*Pyrus communis*) stored in controlled atm  
 . (CA) were studied. Each variety was harvested at three different stages  
 of maturity (Optimal harvest date (OHD) - 1 wk, OHD, OHD + 1 wk). After  
 harvesting, the fruits of each stage of maturity were divided in  
 two samples. One part was treated with MCP 625 ppb the other one was  
 untreated. After treatment the samples were stored for approx. 300 days  
 under CA conditions (temperature -0.5°C, O2 2.5%, CO2 2.0%). Whereas  
 untreated fruits showed excessive firmness losses and reduction of  
 titratable acidity during shelf-life, 1-MCP delayed softening and  
 stabilized titratable acidity of all tested varieties. These effects  
 depended only on stage of maturity and were not variety-dependent.  
 Fruits in stage of over maturity lost more in firmness and acidity  
 than fruits harvested at their optimal stage of maturity. TTS  
 were not affected by 1-MCP. Fungal decay caused by *Penicillium*  
*expansum* (blue mold decay) and *Botrytis cinerea* (gray mold  
 decay) was the main problem after long term storage. CA and also  
 1-MCP were not effective in preventing abundant storage losses caused by  
 excessive fruit rotting. The ability of 1-MCP to reduce fungal  
 decay varied considerably among the cultivars and the stage of  
 maturity. When too late harvested pears were treated with 1-MCP  
 only very little or no response occurred. Treatments with a low dosage of  
 1-MCP (125 ppb) on pears that were harvested too late showed  
 only very little or no response.  
 CC 17-10 (Food and Feed Chemistry)  
 ST Pyrus methylcyclopropene fruit quality storability  
 IT Acidity  
 Botrytis cinerea

Decay (biological)  
 Food preservation  
 Penicillium expansum  
 Pyrus communis  
     (effects of 1-methylcyclopropane treatments on fruit quality  
     and storability of different pear varieties)  
 IT Food texture  
     (firmness; effects of 1-methylcyclopropane treatments on fruit  
     quality and storability of different pear varieties)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
     (effects of 1-methylcyclopropane treatments on fruit quality  
     and storability of different pear varieties)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
     (effects of 1-methylcyclopropane treatments on fruit quality  
     and storability of different pear varieties)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 17 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1110440 HCPLUS  
 DOCUMENT NUMBER: 145:144288  
 TITLE: Effect of 1-MCP on the respiration and ethylene  
     production as well as on the formation of aroma  
     volatiles in 'Jonagold' apple during storage  
 AUTHOR(S): Xuan, H.; Streif, J.  
 CORPORATE SOURCE: Universitaet Hohenheim, KOB Bawendorf, Ravensburg,  
     Germany  
 SOURCE: Acta Horticulturae (2005), 682 (Proceedings of the 5th  
     International Postharvest Symposium, 2004, Volume 2),  
     1203-1210  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB The effect of 1-MCP on the respiration, on the ethylene production and on the  
     formation of aroma volatiles in combination with different picking dates  
     and various storage conditions was investigated. 'Jonagold'  
     apples were picked at different ripening stages and  
     cooled immediately at 4°C before being treated with 1-MCP (625 ppb)  
     during 24 h. After MCP application, apples were stored under  
     refrigerated storage conditions in air (RA-storage) and in controlled  
     atmospheric (CA-storage) for 34 wk and sampled after 0, 8, 18, and 34 wk  
     of storage. Already one day after 1-MCP treatment and also during the  
     subsequent shelf life period the respiration of fruits was  
     markedly reduced. This behavior was continued during the whole storage  
     period. All 1-MCP treated fruits exhibited no climacteric  
     increase in respiration and ethylene formation, whereas untreated control  
     fruits showed a climacteric increase depending on harvest date.  
     Also ethylene formation during shelf life period immediately after harvest

was completely inhibited in 1-MCP treated fruits. The recovery of ethylene production in treated fruits stored in RA started after 18 wk whereas MCP-treated fruits in CA didn't show any ethylene production up to the end of the 34-wk storage period. The aroma volatiles release of control fruits in CA was significantly lower than that of fruits stored in RA. Addnl., the volatiles formation of 1-MCP treated fruits was almost completely prevented during shelf life following an 8-wk storage period in CA- and/or RA-storage. After 18 wk, however, aroma volatiles formation of 1-MCP treated apples from RA-storage was initiated whereas treated fruits in CA-storage didn't show any increased volatiles formation during the whole storage period.

CC 17-10 (Food and Feed Chemistry)

IT Food preservation

Malus pumila

Odor and Odorous substances

Respiration, plant

Volatile substances

(effect of 1-methylcyclopropene on respiration and ethylene production as well as on formation of aroma volatiles in 'Jonagold' apple during storage)

IT 74-85-1, Ethylene, biological studies

RL: ADV (Adverse effect, including toxicity); FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(effect of 1-MCP on respiration and ethylene production as well as on formation of aroma volatiles in 'Jonagold' apple during storage)

IT 3100-04-7, 1-Methylcyclopropene

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(effect of 1-MCP on respiration and ethylene production as well as on formation of aroma volatiles in 'Jonagold' apple during storage)

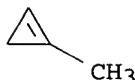
IT 3100-04-7, 1-Methylcyclopropene

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(effect of 1-MCP on respiration and ethylene production as well as on formation of aroma volatiles in 'Jonagold' apple during storage)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 18 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1110426 HCPLUS

DOCUMENT NUMBER: 145:144282

TITLE: Effect of different gas treatments (1-MCP and N<sub>2</sub>O) and MA on ethylene biosynthesis, ripening and quality of peaches

AUTHOR(S): Grima-Calvo, D.; Pena, A. R.; Vendrell, M.

CORPORATE SOURCE: Departament de Genetica Molecular IBMB-CSIC, Barcelona, 08034, Spain

SOURCE: Acta Horticulturae (2005), 682 (Proceedings of the 5th International Postharvest Symposium, 2004, Volume 2),

973-978  
 CODEN: AHORA2; ISSN: 0567-7572

PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Postharvest storage of peach fruits is limited by the appearance of low temperature induced disorders, mainly internal browning and woolliness. Besides cultivar, growing and climate conditions, other factors are relevant for the appearance of these disorders. Previous studies, using different CA conditions, heat treatments, storage temps., were not successful for the 'Merry O'Henry' cultivar. Other treatments with 1-MCP, N2O and MA have been used with the purpose to see the possible role of ethylene on the appearance of these disorders. Fruits were selected according to size, color and flesh firmness and placed at 1°C for 45 days. Part of the fruits were treated with 1000 ppb of 1-MCP for 24 h, other were treated continuously with 50% N2O and other kept under MA with plastic bags. Controls were stored in air. Samples were taken at 15, 30 and 45 days storage and placed at 20°C for 4 days. Respiration and ethylene production were monitored as well as ACC content and ACC oxidase activity. Enzymic peroxidase (POD) and polyphenoloxidase (PPO) were also quantified. Quality parameters were determined in pulp (pH, acidity, texture, color, soluble solids and presence of disorders). Ethylene biosynthesis was significantly influenced by treatments, mainly 1-MCP and N2O. However, in spite of the reduction of ethylene production, no improvement was observed in fruit quality except in texture. Appearance of disorders, mainly browning, began after 30 days storage in all samples, but the gas treated samples showed a lower development at 45 days.

CC 17-10 (Food and Feed Chemistry)

ST peach gas treatment nitrous oxide methylcyclopropene  
 ripening

IT Acidity

Food preservation

Food texture

Prunus persica

(effect of different gas treatments (1-methylcyclopropene and N2O) and modified atmospheric on ethylene biosynthesis, ripening and quality of peaches)

IT Enzymes, biological studies

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (effect of different gas treatments (1-methylcyclopropene and N2O) and modified atmospheric on ethylene biosynthesis, ripening and quality of peaches)

IT Browning (food)

(enzymic; effect of different gas treatments (1-methylcyclopropene and N2O) and modified atmospheric on ethylene biosynthesis, ripening and quality of peaches)

IT Growth and development, plant

(fruit ripening; effect of different gas treatments (1-methylcyclopropene and N2O) and modified atmospheric on ethylene biosynthesis, ripening and quality of peaches)

IT Atmosphere (environmental)

(modified; effect of different gas treatments (1-methylcyclopropene and N2O) and modified atmospheric on ethylene biosynthesis, ripening and quality of peaches)

IT 74-85-1, Ethylene, biological studies

RL: ADV (Adverse effect, including toxicity); FFD (Food or feed use); BIOL (Biological study); USES (Uses)

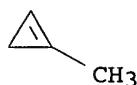
(effect of different gas treatments (1-methylcyclopropene and N2O) and modified atmospheric on ethylene biosynthesis, ripening and quality of peaches)

IT 3100-04-7, 1-Methylcyclopropene 9002-10-2, Polyphenoloxidase 9003-99-0, Peroxidase 10024-97-2, Nitrous oxide, biological studies 12408-02-5, Hydrogen ion, biological studies  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses) (effect of different gas treatments (1-methylcyclopropene and N2O) and modified atmospheric on ethylene biosynthesis, ripening and quality of peaches)

IT 3100-04-7, 1-Methylcyclopropene  
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses) (effect of different gas treatments (1-methylcyclopropene and N2O) and modified atmospheric on ethylene biosynthesis, ripening and quality of peaches)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 19 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1110422 HCPLUS

DOCUMENT NUMBER: 145:144109

TITLE: Interactions of 1-MCP and low oxygen CA storage on apple quality

AUTHOR(S): DeEll, J. R.; Murr, D. P.; Wiley, L.; Mueller, R.

CORPORATE SOURCE: Ontario Ministry of Agriculture and Food, Simcoe, ON, N3Y 4N5, Can.

SOURCE: Acta Horticulturae (2005), 682(Proceedings of the 5th International Postharvest Symposium, 2004, Volume 2), 941-948

CODEN: AHORA2; ISSN: 0567-7572

PUBLISHER: International Society for Horticultural Science

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Fruit firmness of 'McIntosh' was influenced by the interaction of MCP + Temp + CO<sub>2</sub> + Day. Fruit firmness of both 'Gala' and 'Delicious' was influenced by the interaction of MCP + Storage (Regime) + Duration. After 240 days of storage, 'Gala' with no 1-MCP exhibited a larger reduction in firmness when there was no CO<sub>2</sub> present. 'Gala' apples with no 1-MCP and held in 1% O<sub>2</sub> with no CO<sub>2</sub> behaved similar to those fruit held in SCA in terms of CO<sub>2</sub> production, ethylene, and total volatiles. 'Empire' stored at 0°C and in SCA at 2.5°C developed large incidences of core browning, which was worse in 1-MCP treated fruit. In this study, the use of 1-MCP resulted in CO<sub>2</sub> injury in 'McIntosh' and 'Empire' apples, as well as higher incidences of core browning in 'Empire' and internal browning in 'Gala'.

CC 17-4 (Food and Feed Chemistry)

ST Malus methylcyclopropene controlled atm storage fruit quality

IT Food texture

(firmness; investigation on interactions of 1-methylcyclopropene and

low O<sub>2</sub> controlled atmospheric storage on apple quality)

IT Growth and development, plant (fruit ripening; investigation on interactions of 1-methylcyclopropene and low O<sub>2</sub> controlled atmospheric storage on apple quality)

IT Atmosphere (environmental) Browning (food) Food preservation Malus pumila Volatile substances (investigation on interactions of 1-methylcyclopropene and low O<sub>2</sub> controlled atmospheric storage on apple quality)

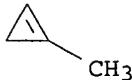
IT 124-38-9, Carbon dioxide, biological studies 3100-04-7, 1-Methylcyclopropene RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses) (investigation on interactions of 1-MCP and low O<sub>2</sub> controlled atmospheric storage on apple quality)

IT 74-85-1, Ethylene, biological studies RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses) (investigation on interactions of 1-methylcyclopropene and low O<sub>2</sub> controlled atmospheric storage on apple quality)

IT 3100-04-7, 1-Methylcyclopropene RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses) (investigation on interactions of 1-MCP and low O<sub>2</sub> controlled atmospheric storage on apple quality)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

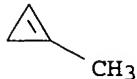


REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 20 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1110407 HCPLUS  
 DOCUMENT NUMBER: 145:144277  
 TITLE: Effects of controlled atmosphere and treatment with 1-methylcyclopropene (1-MCP) on ripening attributes of tomatoes  
 AUTHOR(S): Amodio, M. L.; Rinaldi, R.; Colelli, G.  
 CORPORATE SOURCE: Dip. Pr.I.M.E, Universita degli Studi di Foggia, Foggia, 71100, Italy  
 SOURCE: Acta Horticulturae (2005), 682(Proceedings of the 5th International Postharvest Symposium, 2004, Volume 1), 737-742  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Fresh tomatoes (cv. 'Camonium') at the breaker-turning color stage were stored at 12°C in air (i), air after exposure with 1-ppm 1-MCP for 24 h (ii), 2% O<sub>2</sub> + 3% CO<sub>2</sub> in nitrogen (iii), and in 2% O<sub>2</sub> + 3% CO<sub>2</sub> in nitrogen after exposure with 1-ppm 1-MCP for 24 h (iv). Initially and after 4, 6, 8, and 11 days of storage the following quality attributes were evaluated: color of the epicarp, berry relative deformation, total

soluble solids, and titratable acidity. In addition, respiration rate was measured only for air treatments. Both controlled atmospheric and 1-MCP treatments significantly delayed color evolution and firmness loss. Treatment with 1-MCP also influenced respiration rate, total soluble solids and total soluble solids to titratable acidity ratio. Effect of 1-MCP on ripening was higher than effect of controlled atmospheric. The latter was noticeable only in fruit not treated with 1-MCP. Untreated fruit in air ripened faster than all other treatments, followed by untreated fruit in 2% O<sub>2</sub> + 3% CO<sub>2</sub>. No statistical difference was shown between berries treated with 0.5 ppm of 1-MCP for 24h and followed by storage in air or in controlled atm

CC 17-10 (Food and Feed Chemistry)  
 ST Lycopersicon ripening methylcyclopropene controlled atm  
 IT Atmosphere (environmental)  
     (controlled; effects of controlled atmospheric and treatment with 1-methylcyclopropene on ripening attributes of tomatoes)  
 IT Food texture  
     Lycopersicon esculentum  
     Respiration, plant  
     /effects of controlled atmospheric and treatment with 1-methylcyclopropene on ripening attributes of tomatoes)  
 IT Growth and development, plant  
     (fruit ripening; effects of controlled atm  
     . and treatment with 1-methylcyclopropene on ripening attributes of tomatoes)  
 IT 124-38-9, Carbon dioxide, biological studies 3100-04-7,  
     1-Methylcyclopropene 7782-44-7, Oxygen, biological studies  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
     /effects of controlled atmospheric and treatment with 1-methylcyclopropene on ripening attributes of tomatoes)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
     /effects of controlled atmospheric and treatment with 1-methylcyclopropene on ripening attributes of tomatoes)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 21 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:694718 HCPLUS  
 DOCUMENT NUMBER: 144:86947  
 TITLE: Control of the ripening of banana 'Prata Ana' stored under refrigeration and passive modified atmosphere with use of 1-methylcyclopropene  
 AUTHOR(S): Lima, Luciana Costa; Costa, Sergio Marques; Dias, Mario Sergio Carvalho; Martins, Ramilo Nogueira; Ribeiro Junior, Pedro Martins  
 CORPORATE SOURCE: Universidade Estadual Paulista Julio de Mesquita Filho, Botucatu, SP, Brazil  
 SOURCE: Ciencia e Agrotecnologia (2005), 29(2), 476-480

CODEN: CIAGFZ; ISSN: 1413-7054

PUBLISHER: Universidade Federal de Lavras

DOCUMENT TYPE: Journal

LANGUAGE: Portuguese

AB The onset of ripening of pomaceous, stone, and tropical fruits can be delayed by 1-methylcyclopropene (MCP) which inhibits the action of ethylene in plants. The efficiency of different concns. of MCP in the control of ripening of Prata Ana bananas produced in Brazil and stored in passive modified atmospheric was studied. The banana clusters were harvested at degree 1 of skin coloration, which corresponds to unripe stage of maturation. Only the second bunches from the clusters were used and these were separated into bouquets of 4 fruits. The fruit were treated with MCP at 0, 30, 60, and 90 ppb in sealed plastic boxes at 12°C for 16 h. The fruits were then placed in plastic foam trays, wrapped in 15-μm PVC film, and stored at 12°C and 95% relative air humidity for 10, 15, 20, and 25 days. The periodic evaluations examined fruit diameter, peel color, firmness, soluble solids, titrable acidity, and pH. MCP was effective in delaying the Prata Ana banana ripening. MCP at 30, 60, and 90 ppb had no distinct effect on the evaluated characteristics. The 30 ppb MCP level is more cost-effective and provides the same benefits as the 60 and 90 ppb levels.

CC 17-4 (Food and Feed Chemistry)

ST banana storage ripening control methylcyclopropene inhibitor

IT Color

Food preservation

Food texture

Musa

(control of ripening of Prata Ana bananas stored under refrigeration and passive modified atmospheric with use of 1-methylcyclopropene)

IT Carboxylic acids, biological studies

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(control of ripening of Prata Ana bananas stored under refrigeration and passive modified atmospheric with use of 1-methylcyclopropene)

IT 3100-04-7, 1-Methylcyclopropene 6915-15-7, Malic acid

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(control of ripening of Prata Ana bananas stored under refrigeration and passive modified atmospheric with use of 1-methylcyclopropene)

IT 3100-04-7, 1-Methylcyclopropene

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(control of ripening of Prata Ana bananas stored under refrigeration and passive modified atmospheric with use of 1-methylcyclopropene)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

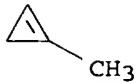


REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 22 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:184639 HCPLUS

TITLE: How postharvest technologies affect quality  
 AUTHOR(S): Watkins, Chris B.; Ekman, Jenny H.  
 CORPORATE SOURCE: Department of Horticulture, Cornell University,  
 Ithaca, NY, USA  
 SOURCE: Environmentally Friendly Technologies for Agricultural  
 Produce Quality (2005), 447-491. Editor(s):  
 Ben-Yehoshua, Shimshon. CRC Press LLC: Boca Raton,  
 Fla.  
 CODEN: 69HVJ8; ISBN: 978-0-8493-1911-2  
 DOCUMENT TYPE: Conference; General Review  
 LANGUAGE: English  
 AB This chapter describes the role postharvest technologies in the quality of fruits and vegetables, including temperature management, relative humidity, altering the storage atmospheric, and heat and radiation treatments. The effect of 1-methylcyclopropene on appearance, flavor, aroma, texture and nutritional value of fruits and vegetables is discussed.  
 CC 17 (Food and Feed Chemistry)  
 ST review postharvest treatment fruit vegetable  
 methylcyclopropene  
 IT INDEXING IN PROGRESS  
 IT Humidity  
     (relative; role of postharvest treatment technologies in fruit and vegetable quality)  
 IT Flavor  
     Food preservation  
     Food preservatives  
     Food texture  
     Fruit  
     Heat treatment  
     Nutrients  
     Odor and Odorous substances  
     Packaging process  
     Radiation  
     Temperature effects, biological  
         Vegetable  
         (role of postharvest treatment technologies in fruit and vegetable quality)  
 IT 74-85-1, Ethylene  
     RL: BSU (Biological study, unclassified); BIOL (Biological study)  
         (role of postharvest treatment technologies in fruit and vegetable quality)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
         (role of postharvest treatment technologies in fruit and vegetable quality)  
 IT 3100-04-7, 1-Methylcyclopropene  
     RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
         (role of postharvest treatment technologies in fruit and vegetable quality)  
 RN 3100-04-7 HCAPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 332 THERE ARE 332 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE  
FORMAT

L96 ANSWER 23 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1110386 HCPLUS  
 DOCUMENT NUMBER: 145:144271  
 TITLE: Inhibition of ethylene via different ways affects LOX  
 and ADH activities, and related volatiles compounds in  
 peach (cv. "Royal Gem")  
 AUTHOR(S): Bellincontro, A.; Morganti, F.; DeSantis, D.; Botondi,  
 R.; Mencarelli, F.  
 CORPORATE SOURCE: Department of Science and Food Technology (LAPO),  
 University of Tuscia, Viterbo, Italy  
 SOURCE: Acta Horticulturae (2005), 682(Proceedings of the 5th  
 International Postharvest Symposium, 2004, Volume 1),  
 445-452  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Peach aroma depletion is the main reason for the reduced consume  
 of peaches in the market. The reason of this low aroma  
 development is the early harvest and the use of low temperature. In previous  
 papers we showed a relationship of volatiles development with ethylene  
 production of peaches. Here we studied the influence of different  
 treatments to inhibit ethylene production on ethylene production, com. quality  
 characteristics, and volatiles in relationships to enzymic activities.  
 Peaches (cv. 'Royal Gem') were picked at early ripening  
 stage (10-11% SSC and 60-68 N firmness) in July and successively separated to  
 be treated with N2 (100%) for 44 h at 20°C + in air at 20°C  
 and 80% RH until day 9, or 1 ppm 1-MCP for 20 h at 20°C + in air at  
 20°C until day 9, or at 3° in air for 7 d + at 20°C  
 for 2 d, or for 9 d in air at 20°C (control). Ethylene was reduced  
 greatly by nitrogen and low temperature. 1-MCP had intermediate values between  
 these two treatments and the control. This ethylene response affected  
 firmness and deformation of peaches but not the SSC (soluble solids  
 content). Even volatiles, mainly esters, were affected by ethylene level.  
 Control fruits showed the highest volatiles content (peak area)  
 after 2 days in parallel with the rise of ethylene for the climacteric  
 peak. 1-MCP treated fruits showed the highest volatiles value  
 after 6 days when the ethylene production reached a value of 4  $\mu\text{L kg}^{-1} \text{h}^{-1}$   
 slightly lower than the level reached by the control 4 days before.  
 Nitrogen and low temperature-treated fruits showed very low ethylene  
 production even after the shift to normal atmospheric (nitrogen treatment);  
 consequently the total volatiles were lower. Nitrogen treated  
 peaches developed an aroma with sweet nuance due to the high  
 content of ethanol and acetate esters. Alc. dehydrogenase (ADH) activity  
 was related to alc. formation. Lipoxygenase (LOX) activity was high in  
 nitrogen-treated fruits but C6 compds. were partially related to  
 the enzyme activity. Low temperature treated peaches increased the  
 lactones production when transferred to higher temps. but the esters content  
 remained lower. Nitrogen can represent a good postharvest treatment for  
 the peach distribution.

CC 17-10 (Food and Feed Chemistry)  
 ST Prunus ethylene ripening aroma lipoxygenase alc dehydrogenase  
 IT Growth and development, plant  
 (fruit ripening; inhibition of ethylene via  
 different ways affects lipoxygenase and alc. dehydrogenase activities,  
 and related volatiles compds. in peach (cv.)  
 IT Flavor

## Odor and Odorous substances

Prunus persica

## Volatile substances

(inhibition of ethylene via different ways affects lipoxygenase and alc. dehydrogenase activities, and related volatiles compds. in peach (cv.)

IT Enzymes, biological studies

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(inhibition of ethylene via different ways affects lipoxygenase and alc. dehydrogenase activities, and related volatiles compds. in peach (cv.)

IT Humidity

(relative; inhibition of ethylene via different ways affects lipoxygenase and alc. dehydrogenase activities, and related volatiles compds. in peach (cv.)

IT 9031-72-5

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(inhibition of ethylene via different ways affects lipoxygenase and alc. dehydrogenase activities, and related volatiles compds. in peach (cv.)

IT 74-85-1, Ethylene, biological studies

RL: ADV (Adverse effect, including toxicity); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(inhibition of ethylene via different ways affects lipoxygenase and alc. dehydrogenase activities, and related volatiles compds. in peach (cv.)

IT 3100-04-7, 1-Methylcyclopropene 7727-37-9, Nitrogen, biological studies 9029-60-1

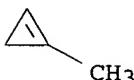
RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(inhibition of ethylene via different ways affects lipoxygenase and alc. dehydrogenase activities, and related volatiles compds. in peach (cv.)

IT 3100-04-7, 1-Methylcyclopropene

RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
(inhibition of ethylene via different ways affects lipoxygenase and alc. dehydrogenase activities, and related volatiles compds. in peach (cv.)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 17 THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 24 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:728665 HCPLUS

DOCUMENT NUMBER: 144:107132

TITLE: The effect of 1-MCP on the quality of 'conference' and 'Abbe Fetel' pears

AUTHOR(S): Zerbini, Paola Eccher; Cambiaghi, Paola; Grassi, Maurizio; Rizzolo, Anna

CORPORATE SOURCE: I.V.T.P.A., Milan, I-20133, Italy

SOURCE: Acta Horticulturae (2005), 671(Proceedings of the IXth International Pear Symposium, 2004), 397-403

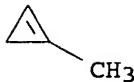
CODEN: AHORA2; ISSN: 0567-7572

PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The ethylene antagonist 1-methylcyclopropene (1-MCP) counteracts ethylene action through binding to the ethylene receptors, so blocking ethylene actions, such as fruit ripening. Pears after harvest and storage must undergo some ripening before becoming ready to eat. Applying 1-MCP to pears requires careful dosage in order to retard ripening without preventing it. The effect of 1-MCP treatment (25 and 50 ppb), repeated every 2 mo in storage, on 'Conference' and 'Abbe Fetel' pears stored for 5 mo in normal (NA) and controlled atmospheric (CA) was studied. 1-MCP treated fruit remained greener than control fruit. Fruit treated with 25 ppb 1-MCP behaved similarly to control fruits, while softening during shelf life was delayed in fruit treated with 50 ppb and they produced less ethylene, especially if fruits were stored in CA. The effect of 1-MCP on firmness and ethylene production lasted for about one month in NA storage and 3 mo in CA storage for 'Conference', and for a shorter period for Abbe Fetel. The repetition of 1-MCP treatment was not effective, perhaps due to the interval between treatments being too long. 'Abbe Fetel' pears showed a higher ethylene production rate during shelf life and were less sensitive to 1-MCP dose than 'Conference' pears. 'Abbe Fetel' fruit softened during shelf life regardless of the 1-MCP dose and the time. After 3 mo in NA, the 1-MCP-treated fruit had a good flavor and a better texture than control fruit, which softened with a firm texture and a watery taste. 1-MCP treatment was effective in reducing superficial scald only in 'Abbe Fetel' pears, which had a higher  $\alpha$ -farnesene content than 'Conference' fruits.

CC 17-10 (Food and Feed Chemistry)  
 ST methylcyclopropene ethylene fruit ripening texture  
 pear  
 IT Color  
 Flavor  
 Food texture  
 Pyrus communis  
 (1-MCP effect on Conference and Abbe Fetel pear quality)  
 IT Alkenes, biological studies  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (alkatrienes, conjugated; 1-MCP effect on Conference and Abbe Fetel pear quality)  
 IT Atmosphere (environmental)  
 (controlled; 1-MCP effect on Conference and Abbe Fetel pear quality)  
 IT Growth and development, plant  
 (fruit ripening; 1-MCP effect on Conference and Abbe Fetel pear quality)  
 IT 74-85-1, Ethylene, biological studies 502-61-4,  $\alpha$ -Farnesene  
 9005-25-8, Starch, biological studies  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (1-MCP effect on Conference and Abbe Fetel pear quality)  
 IT 3100-04-7, 1-MCP  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
 ; BIOL (Biological study); USES (Uses)  
 (1-MCP effect on Conference and Abbe Fetel pear quality)  
 IT 3100-04-7, 1-MCP  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
 ; BIOL (Biological study); USES (Uses)  
 (1-MCP effect on Conference and Abbe Fetel pear quality)  
 RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



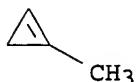
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 25 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:762085 HCPLUS  
 DOCUMENT NUMBER: 144:87137  
 TITLE: Chemical and physical quality of eggplant fruits submitted to different postharvest treatments  
 AUTHOR(S): Moretti, Celso L.; Pineli, Livia L. O.  
 CORPORATE SOURCE: Laboratorio de Pos-colheita, EMBRAJPA Hortalicas, 70359-970, Brazil  
 SOURCE: Ciencia e Tecnologia de Alimentos (Campinas, Brazil) (2005), 25(2), 339-344  
 CODEN: CTALDN; ISSN: 0101-2061  
 PUBLISHER: Sociedade Brasileira de Ciencia e Tecnologia de Alimentos  
 DOCUMENT TYPE: Journal  
 LANGUAGE: Portuguese

AB Eggplant (*Solanum melongena*) fruits were harvested, graded for size and diameter, and treated by storage in 18 µm low-d. polyethylene bags in modified atmospheric, 2% aqueous CaCl<sub>2</sub> dipping + modified atmospheric, exposure to 1-methylcyclopropene gas (1-MCP; 500 nL/L air), and exposure to 1-MCP (500 nL/L) + 2% CaCl<sub>2</sub> dipping. The 1-MCP treatment lasted 12 h at 20°C in a hermetic room. The fruits were then stored at 12±1°C and 85-90% relative humidity for 10 days; they were analyzed every 2 days for mass loss, firmness, external color (brightness), and total soluble solids content. The fruit mass losses increased with storage time. At the end of the 10-day storage period, the control fruits had 14% mass loss. Fruits treated with CaCl<sub>2</sub>, with or without the modified atmospheric, were 2.5-times firmer than control fruits. Fruits stored under modified atmospheric had color L\* values 20% higher than control fruits after 10 days of storage. At the end of the storage period, the control fruits had 20% more soluble solids than fruits stored under modified atm

CC 17-10 (Food and Feed Chemistry)  
 ST Solanum eggplant preservation treatment methylcyclopropene calcium chloride modified atm  
 IT Color  
     Food preservation  
     Food texture  
     Solanum melongena  
       (eggplant fruits post-harvest treatments with CaCl<sub>2</sub>, 1-methylcyclopropene and modified atmospheric effects on chemical and phys. quality after 10-day storage)  
 IT 3100-04-7, 1-Mcp 10043-52-4, Calcium chloride, biological studies  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
     (eggplant fruits post-harvest treatments with CaCl<sub>2</sub>,

1-methylcyclopropene and modified atmospheric effects on chemical and phys. quality after 10-day storage)  
 IT 3100-04-7, 1-Mcp  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses) (eggplant fruits post-harvest treatments with CaCl<sub>2</sub>, 1-methylcyclopropene and modified atmospheric effects on chemical and phys. quality after 10-day storage)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 42 THERE ARE 42 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

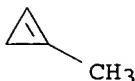
L96 ANSWER 26 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:728662 HCPLUS  
 DOCUMENT NUMBER: 144:68956  
 TITLE: Extending shelf-life of partially ripened 'd' anjou' pears by 1-methylcyclopropene treatment  
 AUTHOR(S): Bai, Jinhe; Chen, Paul M.  
 CORPORATE SOURCE: Mid-Columbia Agricultural Research and Extension Center, Oregon State University, Hood River, OR, 97031, USA  
 SOURCE: Acta Horticulturae (2005), 671(Proceedings of the IXth International Pear Symposium, 2004), 325-331  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB 'D' Anjou' pears (*Pyrus communis* L.) were pre-conditioned with 100  $\mu$ L L-1 (ppm) ethylene at 20°C for 0 (un-conditioned), 1, 2, 3, and 4 day(s) after being stored in regular atmospheric (RA) for 2 and 4 mo or in controlled atmospheric (CA) (2 kPa O<sub>2</sub> + 1 kPa CO<sub>2</sub>) for 8 mo at -1°C. Both un-conditioned and ethylene preconditioned fruit were then subjected to either 1.0  $\mu$ L L-1 (ppm) 1-methylcyclopropene (MCP) or air (no MCP; control) at 20°C for 24 h. Regardless of storage condition and length, MCP-treated fruit softened much slower than control fruit if the fruit had been pre-conditioned with 100 ppm ethylene for 3 d or shorter at 20°C. The authors have demonstrated that 1 ppm MCP treatment of partially ripened 'd' Anjou' pears extends the shelf life for as long as 14 days in the retail markets.  
 CC 17-10 (Food and Feed Chemistry)  
 ST methylcyclopropene ethylene fruit ripening  
 pear  
 IT Food texture  
*Pyrus communis*  
 (1-methylcyclopropene effect on shelf-life of partially ripened pears)  
 IT Growth and development, plant  
 (fruit ripening; 1-methylcyclopropene effect on shelf-life of partially ripened pears)  
 IT 74-85-1, Ethylene, biological studies

RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (1-methylcyclopropene effect on shelf-life of partially ripened  
 pears)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
 ; BIOL (Biological study); USES (Uses)  
 (1-methylcyclopropene effect on shelf-life of partially ripened  
 pears)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
 ; BIOL (Biological study); USES (Uses)  
 (1-methylcyclopropene effect on shelf-life of partially ripened  
 pears)

RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

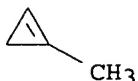
L96 ANSWER 27 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1040696 HCPLUS  
 DOCUMENT NUMBER: 145:144255  
 TITLE: Influence of 1-methylcyclopropene and natureseal on the quality of fresh-cut "Empire" and "Crispin" apples  
 AUTHOR(S): Rupasinghe, H. P. Vasantha; Murr, Dennis P.; DeEll, Jennifer R.; Odumeru, Joseph  
 CORPORATE SOURCE: Department of Environmental Sciences, Nova Scotia Agricultural College, Truro, NS, B2N 5E3, Can.  
 SOURCE: Journal of Food Quality (2005), 28(3), 289-307  
 CODEN: JFQUD7; ISSN: 0146-9428  
 PUBLISHER: Blackwell Publishing, Inc.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Wounding during processing triggers physiol. reactions that limits shelf life of fresh-cut apples. Exposure of "Empire" and "Crispin" apples at harvest to the ethylene antagonist, 1-methylcyclopropene (1-MCP), on the maintenance of fresh-cut quality was evaluated in combination with post-cut dipping of NatureSeal. Efficacy of 1-MCP on fresh-cut physiol. and quality depended on the storage duration and apple cultivar. Ethylene production of apple slices was inhibited by 1-MCP but not by NatureSeal. Total volatiles produced by fresh-cut apples were not affected by NatureSeal but by 1-MCP when 1-mo stored "Crispin" apples were used. 1-MCP influenced the quality attributes of fresh-cut slices prepared from apples stored either 4 mo in cold storage or 6 mo in controlled atmospheric Enzymic browning and softening of the cut-surface, TSS and total microbial growth were suppressed by 1-MCP in "Empire" apples. The influence of 1-MCP on quality attributes in "Crispin" apple slices was marginal.  
 CC 17-10 (Food and Feed Chemistry)  
 ST apple methylcyclopropene NatureSeal storage ethylene browning texture flavor  
 IT Browning (food)

(enzymic; 1-methylcyclopropene and NatureSeal influence on fresh-cut "Empire" and)

IT 3100-04-7, 1-Methylcyclopropene 690998-06-2, NatureSeal  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (1-methylcyclopropene and NatureSeal influence on fresh-cut "Empire" and)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (1-methylcyclopropene and NatureSeal influence on fresh-cut "Empire" and)

RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

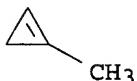


REFERENCE COUNT: 44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 28 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:465191 HCPLUS  
 DOCUMENT NUMBER: 143:476894  
 TITLE: The action site of carbon dioxide in relation to inhibition of ethylene production in tomato fruit  
 AUTHOR(S): de Wild, Hans P. J.; Balk, Peter A.; Fernandes, Elsa C. A.; Peppelenbos, Herman W.  
 CORPORATE SOURCE: Agrotechnology and Food Innovations, Wageningen, 6700 AA, Neth.  
 SOURCE: Postharvest Biology and Technology (2005), 36(3), 273-280  
 CODEN: PBTEED; ISSN: 0925-5214  
 PUBLISHER: Elsevier Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB High CO<sub>2</sub> can inhibit ethylene production of various fruit. A high level of CO<sub>2</sub> (20 kPa) was applied to tomato fruit (*Lycopersicon esculentum* Mill. cv Aromata) at 18°C for 5 days. To investigate the primary action site of CO<sub>2</sub>, we used tomato fruit at a ripening stage where feedback regulation of ethylene production was of limited importance. Feedback reactions were further prevented by a treatment with 1-methylcyclopropene (1-MCP) before exposure to high CO<sub>2</sub>. Tomatoes with and without 1-MCP pre-treatment were exposed to 0 or 20 kPa CO<sub>2</sub>. Ethylene production, 1-aminocyclopropane-1-carboxylate (ACC) content and ACC oxidase mRNA abundance were measured after 1, 2 and 5 days exposure to 0 or 20 kPa CO<sub>2</sub>. High CO<sub>2</sub>-affected LE-ACO1, LE-ACO3 and LE-ACO4 transcripts differently. Several observations show that high CO<sub>2</sub> did not affect the ethylene receptor: (1) CO<sub>2</sub> had a much earlier and much stronger inhibitory effect on ethylene production than 1-MCP; (2) CO<sub>2</sub> prevented while 1-MCP stimulated ACC accumulation; (3) CO<sub>2</sub> prevented the 1-MCP induced decrease of LE-ACO1 abundance, and inhibited the 1-MCP induced decrease of LE-ACO3 abundance. Inhibition of ethylene production together with prevention of ACC accumulation by CO<sub>2</sub>, both in fruit with and without 1-MCP pre-treatment, points to inhibition at a site before the conversion of ACC to ethylene.

CC 17-10 (Food and Feed Chemistry)  
 Section cross-reference(s): 11

ST tomato fruit carbon dioxide ethylene ACC aco gene expression  
 IT **Fruit**  
 Lycopersicon esculentum  
 Respiration, plant  
 (action site of carbon dioxide in relation to inhibition of ethylene production in tomato)  
 IT Growth and development, plant  
 (fruit ripening; action site of carbon dioxide in relation to inhibition of ethylene production in tomato)  
 IT 74-85-1, Ethylene, biological studies 124-38-9, Carbon dioxide, biological studies 3100-04-7, 1-Methylcyclopropene 22059-21-8 98668-53-2, ACC oxidase  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (action site of carbon dioxide in relation to inhibition of ethylene production in tomato)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (action site of carbon dioxide in relation to inhibition of ethylene production in tomato)  
 RN 3100-04-7 HCAPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 29 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1199834 HCAPLUS  
 DOCUMENT NUMBER: 144:191067  
 TITLE: 1-MCP (SmartFresh) controls superficial scald development and maintains apple quality during long term storage  
 AUTHOR(S): Golding, John B.; Ward, Ken R.; Satyan, Shashirekha H.  
 CORPORATE SOURCE: NSW Department of Primary Industries, Gosford  
 Horticultural Institute, Gosford, NSW, 2250, Australia  
 SOURCE: Acta Horticulturae (2005), 687(Proceedings of the International Conference Postharvest Unlimited Downunder, 2004), 219-225  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Superficial scald (scald) is one of the major physiol. disorders that occur during long term cold storage of apples. Scald is currently controlled by the post-harvest application of diphenylamine (DPA), however there is a growing need to seek alternative control methods. A promising reliable alternative to DPA is 1-methylcyclopropene (1-MCP, SmartFresh). The aim of this storage project was to assess 1-MCP (SmartFresh) on apple quality and superficial scald development during storage. Preclimacteric 'Granny Smith' and climacteric 'Red Delicious' apples were treated with SmartFresh, DPA (current approved rate) or left untreated (control) before storage at 0°C in either air or controlled atmospheric (CA, 2% O<sub>2</sub> and 1% CO<sub>2</sub>). SmartFresh was applied in an air tight container as soon as possible after harvest. The results showed that both the com. DPA and SmartFresh

treatments controlled superficial scald equally well in both 'Red Delicious' and 'Granny Smith' apples stored in air and CA for up to eight and ten months, resp. CA storage maintained the quality of untreated and SmartFresh treated fruit. However even under CA storage, some quality benefits such as retention of firmness in 'Red Delicious' apples were observed in SmartFresh treated fruit during storage and after storage compared to untreated control or DPA treated fruit. The pre-storage SmartFresh treatment also significantly reduced the levels of internal ethylene in both apple varieties in air and CA stored fruit and at all removal times for up to ten months storage. The lowering of ethylene production and action in the treated fruit reduced or lowered subsequent physiol. effects during storage. This was evident in the retention of flesh firmness and green background color in SmartFresh treated fruit.

CC 17-10 (Food and Feed Chemistry)  
 ST methylcyclopropene diphenylamine ethylene fruit ripening  
 apple  
 IT Food packaging  
 Food preservation  
 Refrigeration  
 (1-MCP to control superficial scald development and apple  
 quality during long term cold storage)  
 IT Malus pumila  
 (Granny Smith; 1-MCP to control superficial scald development and  
 apple quality during long term cold storage)  
 IT Malus pumila  
 (Red Delicious; 1-MCP to control superficial scald development and  
 apple quality during long term cold storage)  
 IT Atmosphere (environmental)  
 (controlled; 1-MCP to control superficial scald development and  
 apple quality during long term cold storage)  
 IT Food texture  
 (firmness; 1-MCP to control superficial scald development and  
 apple quality during long term cold storage)  
 IT Growth and development, plant  
 (fruit ripening; 1-MCP to control superficial scald  
 development and apple quality during long term cold storage)  
 IT 74-85-1, Ethylene, biological studies  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (1-MCP to control superficial scald development and apple  
 quality during long term cold storage)  
 IT 122-39-4, Diphenylamine, biological studies 3100-04-7,  
 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
 ; BIOL (Biological study); USES (Uses)  
 (1-MCP to control superficial scald development and apple  
 quality during long term cold storage)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use)  
 ; BIOL (Biological study); USES (Uses)  
 (1-MCP to control superficial scald development and apple  
 quality during long term cold storage)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

CH<sub>3</sub>

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 30 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1199848 HCPLUS  
 DOCUMENT NUMBER: 144:227857  
 TITLE: Extension of storage and shelf-life of sweet persimmon with 1-MCP  
 AUTHOR(S): Kim, Young-Ka; Lee, Jung-Myung  
 CORPORATE SOURCE: Dow AgroSciences, Seoul, 135-973, S. Korea  
 SOURCE: Acta Horticulturae (2005), 685 (Proceedings of the 3rd International Symposium on Persimmon, 2004), 165-174  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB Changes in flesh firmness, respiration, peel color, fruit weight, and fruit diameter occurred as fruit ripened and softened during storage of 'Fuyu' persimmon, but all these processes were significantly delayed by 1-MCP treatment. 1-MCP treatment did not show any significant influence on flavor and taste of sweet persimmon. Treatment of 1-MCP improved storability of sweet persimmon more effectively than polyethylene (PE) film modified atmospheric storage. However, addnl. improvement in storage could be obtained by a combination of 1-MCP treatment followed by modified atmospheric storage. 1-MCP treatment before storage was more effective than the treatment during storage. Application of 1-MCP to the fruits stored for 3 mo also improved storability of sweet persimmon. 1-MCP did not slow softening of cut flesh disks or fruit pieces. 1-MCP treatment could still maintain storability even if ethylene was applied exogenously. 1-MCP application maintained fruit firmness more effectively in less mature (more green) fruits than fully mature fruits.

CC 5-3 (Agrochemical Bioregulators)

ST methylcyclopropene ethylene modified atm sweet persimmon storage

IT Atmosphere (environmental)

Diospyros kaki

Storage

(extension of storage and shelf-life of sweet persimmon with 1-MCP)

IT 74-85-1, Ethylene, biological studies 3100-04-7, 1-MCP

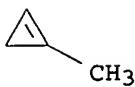
RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (extension of storage and shelf-life of sweet persimmon with 1-MCP)

IT 3100-04-7, 1-MCP

RL: AGR (Agricultural use); BIOL (Biological study); USES (Uses)  
 (extension of storage and shelf-life of sweet persimmon with 1-MCP)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 31 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:390263 HCPLUS  
 DOCUMENT NUMBER: 143:404894  
 TITLE: Effects of polyethylene bags, ethylene absorbent and 1-methylcyclopropene on the storage of Japanese pears.  
 AUTHOR(S): Szczerbanik, M. J.; Scott, K. J.; Paton, J. E.; Best, D. J.  
 CORPORATE SOURCE: Department of Food Science, University of New South Wales, Sydney, NSW. 2052, Australia  
 SOURCE: Journal of Horticultural Science & Biotechnology (2005), 80(2), 162-166  
 CODEN: JHSBFA; ISSN: 1462-0316  
 PUBLISHER: Headley Brothers Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Storage of the 'Nijisseiki' cultivar of Japanese pears was studied over three seasons for periods up to 36 wk at 0°C. Storage in 50 µm thick low-d. polyethylene (LDPE) bags at 0°C considerably delayed yellowing in all expts., even after fruit was removed to 20°C for 1 wk at the end of storage. The addition of an ethylene absorbent made from potassium permanganate on aluminum oxide (Purafil II) further delayed yellowing. Carbon dioxide levels in both treatments varied, but were generally in the range 2-3%. Oxygen levels remained high, generally 16-19%. In bags without Purafil, ethylene levels rose slightly during storage and were generally about 0.15 µl l-1. When Purafil was included in the bags, the ethylene level was reduced 10-fold or more. A sensory test indicated that the use of LDPE bags and ethylene absorbent resulted in fruit with better eating quality than fruit stored in air. Disorders over the 3-yr investigation were low even after long-term storage. The use of polyethylene bags reduced the severity of flesh browning, and flesh spot decay was virtually absent. The use of bags increased the severity of core browning. Inclusion of an ethylene absorbent in bags reduced the severity of disorders, particularly core browning. Treatment of the fruit with 1-methylcyclopropene (1-MCP), before or during storage, resulted in higher ethylene levels in the polyethylene bags. At the concns. used, 1-MCP did not improve the storage of 'Nijisseiki' compared to the use of polyethylene bags with Purafil II.  
 CC 17-10 (Food and Feed Chemistry)  
 ST modified atm packaging methylcyclopropene ethylene  
 pear  
 IT Growth and development, plant  
 (fruit ripening; modified atmospheric storage in polyethylene bags, ethylene absorbent and 1-MCP effects on Japanese pear quality)  
 IT Absorbents  
 Browning (food)  
 Food packaging  
 Food texture

Pyrus pyrifolia  
 Respiration, plant  
 (modified atmospheric storage in polyethylene bags,  
 ethylene absorbent and 1-MCP effects on Japanese pear  
 quality)

IT Chlorophylls, biological studies  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (modified atmospheric storage in polyethylene bags,  
 ethylene absorbent and 1-MCP effects on Japanese pear  
 quality)

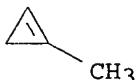
IT Atmosphere (environmental)  
 (modified; modified atmospheric storage in  
 polyethylene bags, ethylene absorbent and 1-MCP effects on Japanese  
 pear quality)

IT 74-85-1, Ethylene, biological studies  
 RL: BSU (Biological study, unclassified); REM (Removal or disposal); BIOL  
 (Biological study); PROC (Process)  
 (modified atmospheric storage in polyethylene bags,  
 ethylene absorbent and 1-MCP effects on Japanese pear  
 quality)

IT 3100-04-7, 1-MCP 9002-88-4, Polyethylene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (modified atmospheric storage in polyethylene bags,  
 ethylene absorbent and 1-MCP effects on Japanese pear  
 quality)

IT 3100-04-7, 1-MCP  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (modified atmospheric storage in polyethylene bags,  
 ethylene absorbent and 1-MCP effects on Japanese pear  
 quality)

RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 32 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2006:184632 HCPLUS  
 TITLE: Minimizing the harmful effects of ethylene on the quality of fruit and vegetables  
 AUTHOR(S): Wills, R. B. H.  
 CORPORATE SOURCE: Department of Food Technology, University of Newcastle, Ourimbah, Australia  
 SOURCE: Environmentally Friendly Technologies for Agricultural Produce Quality (2005), 133-148. Editor(s): Ben-Yehoshua, Shimshon. CRC Press LLC: Boca Raton, Fla.  
 CODEN: 69HVJ8; ISBN: 978-0-8493-1911-2  
 DOCUMENT TYPE: Conference; General Review  
 LANGUAGE: English  
 AB This chapter focuses on the role of ethylene in initiating postharvest ripening and accelerating senescence of fruit and vegetables. The role of 1-methylcyclopropene, nitrous oxide and nitric oxide in the quality of fruits and vegetables

is also discussed.

CC 17 (Food and Feed Chemistry)

ST review ethylene fruit vegetable ripening  
methylcyclopropene atm gas

IT INDEXING IN PROGRESS

IT Color  
 Decay (biological)  
 Food preservation  
 Food preservatives  
 Fruit  
 Senescence, plant  
 Vegetable  
 (control of harmful effects of ethylene on fruit and  
 vegetable quality)

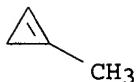
IT 74-85-1, Ethylene  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (control of harmful effects of ethylene on fruit and  
 vegetable quality)

IT 3100-04-7, 1-Methylcyclopropene 10024-97-2, Nitrous oxide  
 10102-43-9, Nitric oxide  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (control of harmful effects of ethylene on fruit and  
 vegetable quality)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (control of harmful effects of ethylene on fruit and  
 vegetable quality)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 64 THERE ARE 64 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 33 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:1199818 HCPLUS  
 DOCUMENT NUMBER: 144:191065  
 TITLE: Controlled atmosphere-induced internal  
 browning in pink lady apples  
 AUTHOR(S): de Castro Hernandez, Elena; Biasi, Bill; Mitcham,  
 Elizabeth  
 CORPORATE SOURCE: Department of Plant Sciences, University of  
 California, Davis, CA, USA  
 SOURCE: Acta Horticulturae (2005), 687 (Proceedings of the  
 International Conference Postharvest Unlimited  
 Downunder, 2004), 63-69  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Apple (*Malus domestica* Borkh, Pink Lady) fruit were  
 harvested from one Californian orchard in 2002 and 2003 at 2 and 3  
 different maturity stages, resp. Fruit were immediately stored  
 at 0.5°C in air or in controlled atmospheric (CA), 1, 3 and 5%  
 CO<sub>2</sub> in combination with 1.5, 3 and 21% O<sub>2</sub> in 2002 and 1 and 3% CO<sub>2</sub> with 2%

O2 in 2003. Addnl. treatments in 2003 included 1ppm of 1-methylcyclopropane (1-MCP) for 24 h, 2200 ppm of diphenylamine (DPA) for 5 min and delayed CA storage at 0.5°C for 2 or 4 wk. The area of flesh browning (FB) was determined after storage in CA or air and 5 days at 20°C. IB was not seen in fruit stored in air.

It appeared in fruit after 2 mo storage in CA, and the incidence did not increase after longer storage times. There was no significant effect of maturity at harvest on the incidence of FB; however, FB increased with increasing CO2 concns. and decreasing O2 concns. in storage. 1-MCP and 2 and 4 wk delayed CA did not significantly inhibit the incidence of FB while DPA inhibited it completely. When comparing similar storage **atmospheres** for both seasons, the FB incidence was significantly different, being much higher in 2002. A mineral anal. of the **apple** flesh showed differences among the 2 seasons.

Concns. of NH4, B, Zn, Ca, and Mg were significantly higher and Fe was significantly lower in 2003 corresponding with a lower incidence of FB.

CC 17-10 (Food and Feed Chemistry)

ST controlled atm diphenylamine methylcyclopropene **apple**  
**browning**

IT **Browning** (food)

Food texture

*Malus pumila*

(controlled **atmospheric**-induced internal **browning** in pink lady **apples** and effect of 1-MCP and diphenylamine)

IT **Atmosphere** (environmental)

(controlled; controlled **atmospheric**-induced internal **browning** in pink lady **apples** and effect of 1-MCP and diphenylamine)

IT Growth and development, plant

(**fruit ripening**; controlled **atmospheric**-induced internal **browning** in pink lady **apples** and effect of 1-MCP and diphenylamine)

IT 122-39-4, Diphenylamine, biological studies 124-38-9, Carbon dioxide, biological studies 3100-04-7, 1-MCP 7782-44-7, Oxygen, biological studies

RL: **FFD** (Food or feed use); **BIOL** (Biological study); **USES** (Uses)  
(controlled **atmospheric**-induced internal **browning** in pink lady **apples** and effect of 1-MCP and diphenylamine)

IT 7439-89-6, Iron, biological studies 7439-95-4, Magnesium, biological studies 7440-42-8, Boron, biological studies 7440-66-6, Zinc, biological studies 7440-70-2, Calcium, biological studies 7664-41-7, Ammonia, biological studies

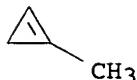
RL: **BSU** (Biological study, unclassified); **BIOL** (Biological study)  
(controlled **atmospheric**-induced internal **browning** in pink lady **apples** and mineral element content)

IT 3100-04-7, 1-MCP

RL: **FFD** (Food or feed use); **BIOL** (Biological study); **USES** (Uses)  
(controlled **atmospheric**-induced internal **browning** in pink lady **apples** and effect of 1-MCP and diphenylamine)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT:

13

THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 34 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:978277 HCPLUS  
 DOCUMENT NUMBER: 145:165877  
 TITLE: Effect of ethylene, intermittent warming and controlled atmosphere on postharvest quality and the occurrence of woolliness in peach (*Prunus persica* cv. Chiripa) during cold storage  
 AUTHOR(S): Girardi, Cesar L.; Corrent, Adriana R.; Lucchetta, Luciano; Zanuzo, Marcio R.; da Costa, Tatiane S.; Brackmann, Auri; Twyman, Richard M.; Nora, Fabiana R.; Nora, Leonardo; Silva, Jorge A.; Rombaldi, Cesar V.  
 CORPORATE SOURCE: EMBRAPA/Centro National de Pesquisa de Uva e Vinho, Bento Goncalves, CEP 95700, Brazil  
 SOURCE: Postharvest Biology and Technology (2005), 38(1), 25-33  
 CODEN: PBTEED; ISSN: 0925-5214  
 PUBLISHER: Elsevier Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB The loss of quality in peach (*Prunus persica*) after harvest is associated with metabolic changes, mech. damage, loss of pulp firmness, physiol. disorders and decay. In the 'Chiripa' cultivar, woolliness is a major physiol. process that affects the postharvest quality. For a better understanding of the development of woolliness in 'Chiripa' peach and to identify conditions that can prevent it, we devised several postharvest treatments consisting of cold storage (CS) either alone or in combination with the application of ethylene or 1-methylcyclopropene (1-MCP), intermittent warming or controlled atmospheric (CA) storage. We evaluated the effects of these treatments on postharvest preservation, the occurrence of woolliness and the activities of endo-polygalacturonase (endo-PG), exo-polygalacturonase (exo-PG) and pectin methylesterase (PME). Our results indicated that these treatments could modify the activities of the three enzymes, and that the induction of endo-PG and exo-PG activity and/or the repression of PME activity reduced the occurrence of woolliness. CS alone had a major effect on endo-PG and exo-PG activity but less impact on PME activity. The application of 1-MCP exacerbated this difference. Either ethylene application or intermittent warming increased endo-PG and exo-PG activities without reducing PME activity, resulting in the loss of pulp firmness and decay. Under CA storage, PME activity was effectively reduced and the activities of endo-PG and exo-PG, which were low during the treatment, dramatically increased 5 days after the end of the treatment. The overall quality of the peaches was better preserved under CA storage alone. With this treatment, the difference between PG and PME activity narrowed and the activity of both enzymic groups decreased. As a result, the firmness of the pulp was better preserved and the incidence of decay and woolliness decreased.

CC 17-10 (Food and Feed Chemistry)  
 ST peach ethylene methylesterase storage polygalacturonase pectin methylesterase texture  
 IT Temperature effects, biological  
     (cold; effect of ethylene, intermittent warming and controlled atmospheric on postharvest quality and occurrence of woolliness in peach (*Prunus persica* cv. Chiripa) during cold storage)  
 IT Atmosphere (environmental)  
     Food preservation  
     Food texture  
     *Prunus persica*

## Storage

(effect of ethylene, intermittent warming and controlled atmospheric on postharvest quality and occurrence of woolliness in peach (Prunus persica cv. Chiripa) during cold storage)

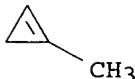
IT 9025-98-3, Pectin methylesterase 9032-75-1, endo-Polygalacturonase  
 9045-35-6, exo-Polygalacturonase  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (effect of ethylene or 1-methycyclopropene, intermittent warming and controlled atmospheric on postharvest quality and occurrence of woolliness in peach (Prunus persica cv. Chiripa) during cold storage)

IT 74-85-1, Ethylene, biological studies 3100-04-7,  
 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (effect of ethylene or 1-methycyclopropene, intermittent warming and controlled atmospheric on postharvest quality and occurrence of woolliness in peach (Prunus persica cv. Chiripa) during cold storage)

IT 124-38-9, Carbon dioxide, uses 7782-44-7, Oxygen, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (effect of ethylene, intermittent warming and controlled atmospheric on postharvest quality and occurrence of woolliness in peach (Prunus persica cv. Chiripa) during cold storage)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (effect of ethylene or 1-methycyclopropene, intermittent warming and controlled atmospheric on postharvest quality and occurrence of woolliness in peach (Prunus persica cv. Chiripa) during cold storage)

RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 35 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2005:978276 HCPLUS  
 DOCUMENT NUMBER: 145:165876  
 TITLE: Influence of 1-methylcyclopropene (1-MCP), diphenylamine (DPA), and CO<sub>2</sub> concentration during storage in 'Empire' apple quality  
 AUTHOR(S): DeEll, Jennifer R.; Murr, Dennis P.; Mueller, Ron; Wiley, Len; Porteous, Murray D.  
 CORPORATE SOURCE: Ontario Ministry of Agriculture and Food, Simcoe, ON, N3Y 4N5, Can.  
 SOURCE: Postharvest Biology and Technology (2005), 38(1), 1-8  
 CODEN: PBTEED; ISSN: 0925-5214  
 PUBLISHER: Elsevier Ltd.  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB The objectives of this study were: (1) to determine the effects and interactions of 1-methylcyclopropene (1-MCP) and diphenylamine (DPA) on the quality of 'Empire' apples during storage and (2) to investigate the effects of CO<sub>2</sub> in the CA regime for Empire' apples

treated with 1-MCP. 'Empire' apples were harvested, treated with or without DPA (1 g L-1) and 1-MCP (1  $\mu$ L L-1, 24 h at 0°), and subsequently stored in controlled atmospheric (CA) of 2.5 kPa O<sub>2</sub> with either 2 or 0 kPa CO<sub>2</sub> for 120 and 240 days at 2°. DPA treatment had no significant effect on CO<sub>2</sub> production, ethylene, and total volatiles, while apples not treated with 1-MCP were firmer with DPA than without DPA. 1-MCP-treated fruit were firmer than those not treated with 1-MCP, while untreated fruit held in CA with CO<sub>2</sub> were firmer than those held with no CO<sub>2</sub>. 1-MCP-treated fruit held in CA with CO<sub>2</sub> were slightly firmer than those held in CA without CO<sub>2</sub> after 240 days of storage. 1-MCP effectively suppressed CO<sub>2</sub> production, ethylene and total volatiles in fruit in CA storage and after removal to air, but recovery of these metabolic processes occurred sooner with longer CA storage duration. CO<sub>2</sub> in the storage regime further suppressed CO<sub>2</sub> production, ethylene, and total volatiles in 1-MCP-treated apples. These results confirm the importance of DPA treatment and CO<sub>2</sub> in the CA regime for maintaining 'Empire' apple quality, especially after long-term storage. However, 1-MCP treatment mimics the beneficial effect of CO<sub>2</sub> on firmness. The data suggests that CO<sub>2</sub> could be eliminated or reduced in CA regimes for Empire' apples treated with 1-MCP, in order to reduce susceptibility to CO<sub>2</sub> injury and shorten recovery time of metabolic processes upon removal from CA.

CC 17-10 (Food and Feed Chemistry)  
 ST apple storage methylcyclopropene diphenylamine carbon dioxide  
 ethylene texture  
 IT Malus pumila  
 (Empire; influence of 1-methylcyclopropene (1-MCP), diphenylamine (DPA), and CO<sub>2</sub> concentration during storage in 'Empire' apple quality)  
 IT Food preservation  
 Food texture  
 Storage  
 Volatile substances  
 (influence of 1-methylcyclopropene (1-MCP), diphenylamine (DPA), and CO<sub>2</sub> concentration during storage in 'Empire' apple quality)  
 IT 74-85-1, Ethylene, biological studies 9005-25-8, Starch, biological studies  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (influence of 1-methylcyclopropene (1-MCP), diphenylamine (DPA), and CO<sub>2</sub> concentration during storage in 'Empire' apple quality)  
 IT 122-39-4, Diphenylamine, biological studies 124-38-9, Carbon dioxide, biological studies 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (influence of 1-methylcyclopropene (1-MCP), diphenylamine (DPA), and CO<sub>2</sub> concentration during storage in 'Empire' apple quality)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (influence of 1-methylcyclopropene (1-MCP), diphenylamine (DPA), and CO<sub>2</sub> concentration during storage in 'Empire' apple quality)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)

 CH<sub>3</sub>

L96 ANSWER 36 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:630670 HCAPLUS  
 DOCUMENT NUMBER: 141:349075  
 TITLE: The influence of 1-methylcyclopropene on "Cortland" and "McIntosh" apple quality following long-term storage  
 AUTHOR(S): DeLong, John M.; Prange, Robert K.; Harrison, Peter A.  
 CORPORATE SOURCE: Atlantic Food and Horticulture Research Centre, Agriculture and Agri-Food Canada, Kentville, NS, B4N 1J5, Can.  
 SOURCE: HortScience (2004), 39(5), 1062-1065  
 CODEN: HJHSAR; ISSN: 0018-5345  
 PUBLISHER: American Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English

AB "Redcort Cortland" and "Redmax" and "Summerland McIntosh" apples (*Malus xdomestica* Borkh.) were treated with 900 nL·L<sup>-1</sup> of 1-methylcyclopropene (1-MCP) for 24 h at 20 °C before storage and were kept at 3 °C in either a controlled atmospheric (CA) of 2 kPa O<sub>2</sub> and <2.5 kPa CO<sub>2</sub> or in an air (RA) environment for up to 9 mo. After 4.5 mo, half of the fruit were treated with a second 900 nL·L<sup>-1</sup> 1-MCP application in air at 3 °C for 24 h and then returned to RA or CA storage. At harvest and following removal at 3, 6, and 9 mo and a 7-day shelf life at 20 °C, fruit firmness, titratable acidity (TA) and soluble solids content (SSC) were measured, while internal ethylene concns. (IEC) in the apple core were quantified after 1 day at 20 °C. Upon storage removal and following a 21-day shelf life at 20 °C, disorder incidence was evaluated. 1-MCP-treated apples, particularly those held in CA-storage, were more firm and had lower IEC than untreated fruit. Higher TA levels were maintained with 1-MCP in all three strains from both storages, while SSC was not affected. Following the 6- and/or 9-mo removals, 1-MCP suppressed superficial scald development in all strains and reduced core browning and senescent breakdown in RA-stored "Redmax" and "Summerland" and senescent breakdown in RA-stored "Redcort". 1-MCP generally maintained the quality of "Cortland" and "McIntosh" fruit held in CA and RA environments (particularly the former) to a higher degree than untreated apples over the 9-mo storage period. A second midstorage application of 1-MCP at 3 °C did not improve poststorage fruit quality above a single, prestorage treatment.

CC 17-10 (Food and Feed Chemistry)  
 Section cross-reference(s): 5

ST methylcyclopropene apple quality storage

IT *Malus pumila*  
 (Cortland; effect of 1-methylcyclopropene on "Cortland" and "McIntosh" apple quality following long-term storage)

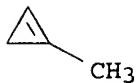
IT *Malus pumila*  
 (McIntosh; effect of 1-methylcyclopropene on "Cortland" and "McIntosh" apple quality following long-term storage)

IT **Fruit**  
 (effect of 1-methylcyclopropene on "Cortland" and "McIntosh" apple quality following long-term storage)

IT 74-85-1, Ethylene, biological studies  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (effect of 1-methylcyclopropene on "Cortland" and "McIntosh" apple quality and ethylene concentration following long-term storage)

IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (effect of 1-methylcyclopropene on "Cortland" and "McIntosh")

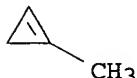
apple quality following long-term storage)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); BIOL (Biological study)  
 (effect of 1-methylcyclopropene on "Cortland" and "McIntosh"  
 apple quality following long-term storage)  
 RN 3100-04-7 HCAPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 37 OF 87 HCAPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:375842 HCAPLUS  
 DOCUMENT NUMBER: 141:224306  
 TITLE: Sensory and physical evaluations of cold stored "Tommy Atkins" mangoes influenced by 1-MCP and modified atmosphere packaging  
 AUTHOR(S): Cocozza, Fabio Del Monte; Jorge, Jose Tadeu; Alves, Ricardo Elesbão; Filgueiras, Heloisa Almeida Cunha; Garruti, Deborah Dos Santos; Pereira, Marcio Eduardo Canto  
 CORPORATE SOURCE: Faculdade de Engenharia Agricola, Universidade Estadual de Campinas, Campinas, 13083-970, Brazil  
 SOURCE: Acta Horticulturae (2004), 645 (Proceedings of the Seventh International Mango Symposium, 2002), 655-661  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB "Tommy Atkins" mangoes were harvested at stage 2 maturity and treated in a day later with 1-methylcyclopropene (SmartFresh, 100 and 500 nL.L-1), at room temperature for 12 h. Some fruits were wrapped with Xtend for modified atmospheric generation and the effects of 1-MCP and modified atmospheric (with or without MA) were evaluated during 25 days of storage at 11.5 ± 1.7 °C and 86.1 ± 8.4 % RH, followed by 7 days at 25.4 ± 0.2 °C and 97.6 ± 1.2 % RH. Sensory anal. was carried out once, after storage. Luminosity (\*L) measured in the green part of the mango skin was affected by 1-MCP doses until the 25th day, and values were higher in fruits stored without MA. Effects of were only noticed in \*L and Chroma (C) characteristics of pulp color. \*L values were lower and C values were higher when MA was used. Modified atmospheric was efficient in protecting fruits from weight loss during cold storage. Fruits stored without MA and treated with 100 nL.L-1 were firmer but this was not detected by the sensory panel. Sensory anal. revealed that ripening was accelerated for fruits stored under MA and for those treated with 500 nL.L-1 and kept without MA. Judges did not notice differences in aroma, color or firmness between the control and 100 nL.L-1 treated fruits.  
 CC 17-10 (Food and Feed Chemistry)  
 ST methylcyclopropene modified atm packaging flavor  
 texture mango  
 IT Color  
 Flavor

Food packaging  
 Food texture  
 Mangifera indica  
 Respiration, plant  
 (1-MCP and modified atmospheric packaging effects on physicochem. parameters of mango fruits)  
 IT Food  
 (films; 1-MCP and modified atmospheric packaging effects on physicochem. parameters of mango fruits)  
 IT Atmosphere (environmental)  
 (modified; 1-MCP and modified atmospheric packaging effects on physicochem. parameters of mango fruits)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (1-MCP and modified atmospheric packaging effects on physicochem. parameters of mango fruits)  
 IT 3100-04-7, 1-Methylcyclopropene  
 RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)  
 (1-MCP and modified atmospheric packaging effects on physicochem. parameters of mango fruits)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 38 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN  
 ACCESSION NUMBER: 2004:375841 HCPLUS  
 DOCUMENT NUMBER: 141:224305  
 TITLE: Respiration rate and chemical characteristics of cold stored "Tommy Atkins" mangoes influenced by 1-MCP and modified atmosphere packaging  
 AUTHOR(S): Cocozza, Fabio Del Monte; Jorge, Jose Tadeu; Alves, Ricardo Elesba; Filgueiras, Heloisa Almeida Cunha; Pereira, Marcio Eduardo Canto  
 CORPORATE SOURCE: Faculdade de Engenharia Agricola, Universidade Estadual de Campinas, Campinas, 13083-970, Brazil  
 SOURCE: Acta Horticulturae (2004), 645 (Proceedings of the Seventh International Mango Symposium, 2002), 645-650  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB "Tommy Atkins" mangoes were harvested at stage 2 of maturity and treated with gaseous 1-Methylcyclopropene (1-MCP) (100 or 500 nL.L-1) at room temperature in sealed chambers for 12 h. Aiming to study the influence of 1-MCP and modified atmospheric, isolated or combined, on ripening, fruits were stored during 25 days at 11.5 ± 1.7 °C and 86.1 ± 8.4 % RH, followed by 7 days at 25.4 ± 0.2 °C and 97.6 ± 1.2 % RH. The lowest respiratory rates were observed in fruits treated with 100 nL.L-1 of 1-MCP without MA and in

those with 500 nL.L-1 of 1-MCP and MA. 1-MCP kept fruits more acid and with higher vitamin C contents, especially the concentration of 100 nL.L-1 of

1-MCP which showed the greatest effect on "Tommy Atkins" ripening. There is apparently no effect of 1-MCP on total soluble solids. The isolated use of modified atmospheric by film reduced soluble solids accumulation. The use of 1-MCP alone would represent lower postharvest costs, higher number of treated fruits and less postharvest management steps.

CC 17-10 (Food and Feed Chemistry)

ST methylcyclopropene fruit ripening ethylene ascorbate respiration modified atm

IT Growth and development, plant

(fruit ripening; respiration and chemical characteristics of cold stored mangoes influenced by 1-MCP and modified atmospheric packaging)

IT Atmosphere (environmental)

(modified; respiration and chemical characteristics of cold stored mangoes influenced by 1-MCP and modified atm packaging)

IT Food packaging

Mangifera indica

Refrigeration

Respiration, plant

(respiration and chemical characteristics of cold stored mangoes influenced by 1-MCP and modified atmospheric packaging)

IT Solids

(soluble; respiration and chemical characteristics of cold stored mangoes influenced by 1-MCP and modified atmospheric packaging)

IT 50-81-7, Ascorbic acid, biological studies 74-85-1, Ethylene, biological studies

RL: BSU (Biological study, unclassified); BIOL (Biological study) (respiration and chemical characteristics of cold stored mangoes influenced by 1-MCP and modified atmospheric packaging)

IT 3100-04-7, 1-MCP

RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(respiration and chemical characteristics of cold stored mangoes influenced by 1-MCP and modified atmospheric packaging)

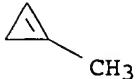
IT 3100-04-7, 1-MCP

RL: BSU (Biological study, unclassified); FFD (Food or feed use); BIOL (Biological study); USES (Uses)

(respiration and chemical characteristics of cold stored mangoes influenced by 1-MCP and modified atmospheric packaging)

RN 3100-04-7 HCPLUS

CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



REFERENCE COUNT: 18 THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L96 ANSWER 39 OF 87 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:165359 HCPLUS

DOCUMENT NUMBER: 140:405851

TITLE: Banana ripening: supporting the art with

science  
 AUTHOR(S): Klieber, A.; Bagnato, N.; Sedgley, M.; Barrett, B.  
 CORPORATE SOURCE: Department of Horticulture, Viticulture & Oenology,  
 The University of Adelaide Waite Campus, Glen Osmond,  
 SA, 5064, Australia  
 SOURCE: Acta Horticulturae (2003), 628(Vol. 2, Issues and  
 Advances in Postharvest Horticulture, Volume 2),  
 475-480  
 CODEN: AHORA2; ISSN: 0567-7572  
 PUBLISHER: International Society for Horticultural Science  
 DOCUMENT TYPE: Journal  
 LANGUAGE: English  
 AB Banana (*Musa acuminata* 'Williams Cavendish' Colla) marketable life is governed by **ripening** conditions and can be manipulated with **post-ripening** treatments; however, these processes are poorly understood. The authors examined the effect of **ripening temps.** throughout the year, **post-ripening** 1-Me cyclopropene (1-MCP) exposure and **vacuum** ethanol infiltration on banana marketable life and quality. **Ripening fruit** throughout the year at 18-20 °C resulted in **fruit** with less **peel discoloration**, due to in-field chilling in colder months or cyclones in warmer months, compared with 14-16 °C; however, in summer 14-16 °C extended marketable life. 1-MCP at 300 nL·L<sup>-1</sup> doubled banana marketable life to more than 6 days at 20 °C without affecting **fruit** quality, but 3 nL·L<sup>-1</sup> had little effect and 30,000 nL·L<sup>-1</sup> stopped **ripening** all-together. **Vacuum**-infiltration with ethanol did not extend marketable life as ethanol did not penetrate into pulp tissues.  
 CC 17-10 (Food and Feed Chemistry)  
 ST methylcyclopropene fruit ripening ethylene ethanol banana  
 IT Growth and development, plant  
     (fruit ripening; post-ripening treatments of banana)  
 IT Atmosphere (environmental)  
     (modified; post-ripening treatments of banana)  
 IT Discoloration  
     Food texture  
     Musa acuminata  
     Temperature effects, biological  
     (post-ripening treatments of banana)  
 IT 64-17-5, Ethanol, biological studies 74-85-1, Ethylene, biological studies  
     RL: BSU (Biological study, unclassified); BIOL (Biological study)  
     (post-ripening treatments of banana)  
 IT 3100-04-7, 1-MCP  
     RL: BSU (Biological study, unclassified); FFD (Food or feed use);  
     BIOL (Biological study); USES (Uses)  
     (post-ripening treatments of banana)  
 IT 3100-04-7, 1-MCP  
     RL: BSU (Biological study, unclassified); FFD (Food or feed use);  
     BIOL (Biological study); USES (Uses)  
     (post-ripening treatments of banana)  
 RN 3100-04-7 HCPLUS  
 CN Cyclopropene, 1-methyl- (7CI, 8CI, 9CI) (CA INDEX NAME)